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EVALUATXONDESIGNREPORTFOR THE MEDICARE PHYSICIAN PREFERRED PROVIDER ORGANIZATION DEMONSTRATIONS

REVISED

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EXECUTIVE SUMMARY

Preferred Provider Organizations (PPOs) are a relatively new health plan option in a health care market characterized by rapidly rising costs. PPOs address the cost containment concerns of payers by recruiting lower cost providers, contracting with providers at discounted prices, and implementing utilization review and controls. Additionally, PPOs give fee-for-service providers an opportunity to regain some of the market share lost to health maintenance organizations (HMOs), and appeal to consumers who still have full freedom of provider choice (although at a less favorable rate) should they decide to use a non-network provider. If PPOs are able to enroll and retain significant numbers of Medicare beneficiaries, provide incentives for enrollees to use PPO providers a high percentage of the time, and contain costs, PPOs may be able to lower Medicare costs.

In June 1989 the Health Care Financing Administration (HCFA) awarded a contract to Mathematica Policy Research (MPR) to evaluate the pilot Medicare PPO demonstration. Currently, two demonstration sites are operational: CAPP CARE, in Orange County, California, and Blue Cross and Blue Shield of Arizona (BCBS/AZ) in Maricopa and Pima counties. A third PPO, Family Health Plan in Minneapolis, Minnesota, is in the planning stage and may be operational in January 1992.

'Ihc objectives of this evaluation are:

- To determine the operational feasibility of the Medicare PPO concept
- To identify operational problems that require resolution before expansion of the demonstration or implementation of a permanent program
- To assess the initial impact of the PPOs on beneficiary choice and selection, beneficiary use and costs, provider participation, provider practice patterns, and Medicare program costs

EVALUATION DESIGN

. The evaluation has two principal components:

- An assessment of the implementation experience prior to demonstration start-up and during the initial six months of the demonstration
- An evaluation of site-specific impacts of the demonstration including analyses of beneficiary choice and biased selection, beneficiary use and costs of services, and provider practice patterns

A third component, a cross-cutting evaluation of all sites, has been dropped since two of* five demonstration sites have withdrawn, and a third site is not yet operational.

The assessment of the implementation experience will include: (1) summarizing the basic characteristics of each PPO, (2) examining the PPO's experience in beneficiary enrollment and

disenrollment, provider recruitment and participation, utilization, finances, and quality assurance, and (3) assessing the key implementation decisions, management strategies, and marketing plans. The implementation analysis will also note any problems the PPOs may have had in complying with HCFA's requirements for reporting and review, and will report on PPO interaction with the carriers, fiscal intermediaries, and regional offices. Most of the information for the implementation analysis will be acquired from site visits, telephone interviews, and quarterly reports submitted by the PPOs.

A comparison group methodology will be used for the site-specific analyses of beneficiary choice and biased selection, beneficiary use and costs, and provider practice patterns. Enrollees will be compared to beneficiaries in a comparison group to answer the following questions:

- When a PPO option is offered to Medicare beneficiaries who are allowed to voluntarily enroll in the program, how many and what types of beneficiaries enroll?
- Among those who enroll, what proportion of health care is through PPO providers?
- Are beneficiaries who enroll different from beneficiaries who do not enroll with respect to propensity to use health services?
- What are the characteristics of the beneficiaries who use PPO providers, and how do they differ from beneficiaries in the same area who do not use PPO providers?
- After controlling for enrollee propensity to use health services (biased selection), how do average reimbursements for enrollees compare to nonenrollees in the market area?
- Do beneficiaries who receive care from PPO providers receive different levels and types of treatment than they would have received from non-PPO providers?

The statistical comparison-group analysis will be conducted with individual-level Medicare beneficiary data on demographic characteristics and use and cost of services, with data from HCFA, and with 100 percent Part B claims data from the carriers. The statistical analysis will be supplemented by analysis of data collected from a set of structured discussions with beneficiaries to explore issues of enrollment and provider choice. The structured discussions will address the extent to which beneficiaries are aware of and understand the demonstration, and will identify any additional incentives that would be most effective in encouraging beneficiaries to switch to a PPO provider.

Assuming carriers provide claims data which uniquely identify physicians, the practice patterns of PPO demonstration physicians will be compared to those of non-PPO physicians before demonstration start-up and during the demonstration. The procedures performed by PPO and non-PPO physicians per beneficiary treated (or per encounter) will be compared, controlling for case mix and patient demographic characteristics.

To assess the total effect of the PPO demonstration on Medicare program costs, site-specific data on the PPOs' effects on reimbursements and administrative costs will be used to address the following questions:

- What is the total effect of the demonstration on costs to the Medicare program across all sites?

- If there are differences across sites in the effectiveness of the demonstration in reducing Medicare program costs, is this due primarily to differences in average administrative costs or to differences in impacts on reimbursements?

The demonstration evaluation will conclude with a feasibility analysis to determine whether the PPO approach is feasible on a national, permanent basis. Using findings from the implementation analysis and the analysis of beneficiary choice and selection, beneficiary use and cost of services, provider participation, and Medicare program costs, the feasibility analysis will determine the extent to which:

- The Medicare PPO program is operationally feasible

- The demonstration PPOs are able to attract and retain sufficient beneficiary enrollment, and

- Savings due to utilization management are great enough to offset administrative costs and any reductions in out-of-pocket costs offered by HCFA to beneficiaries for using the PPO providers.

DATA NEEDS

Data for the demonstration evaluation will come from the following sources:

- Individual-level data from HCFA and the carriers

- Enrollment and financial data from the PPOs

- Sitevisit data

- Telephone interviews with carriers, fiscal intermediaries, representatives of the health insurance industry, and representatives of local health agencies

- Structured discussions with groups of enrollees and nonenrollees

- Secondary data sources

The major types of individual level data needed include the Health Insurance Skeleton Eligibility Write-off (HISKEW) file, the Health Insurance Printout (HIPO) file, the Medicare Automated Data Retrieval System (MADRS) file, claims data from the carriers, and service use and costs data from the common working file. The HISKEW and HIPO files contain identification, demographic, and eligibility data on every individual covered by Medicare, and will provide the frame for drawing the comparison samples. The MADRS file will be the source of data on members' use and cost of

services two years prior to demonstration start date. It contains claims level data for Part A service use, and annual summary data for Part B service use.

Obtaining detailed Part B claims data is important for the analysis of service use and cost and physician practice patterns because the demonstration focuses on Part B services. Since the MADRS file contains only annual summary Part B data for physician services, we will also use claims level Part B data which include procedure codes and provider identification numbers. The claims level Part B data will be obtained from the carriers and from the common working file.

There have been numerous delays and problems in receiving Part B claims data from the carrier for CAPP CARE The carrier took longer than anticipated to deliver the data to us, and upon recent review of the data we have learned that a key variable is missing from the data. Due to these problems in obtaining carrier data, we anticipate that at the earliest the Final Interim Report on Beneficiary Choice, Biased Selection, and Use and Cost of Services will be complete in July 1992 This is six months after the revised due date indicated in the Revised Schedule of Deliverables of the Contract Modification.

The PPOs will submit: (1) quarterly lists of beneficiary enrollments and disenrollments, (2) quarterly reports summarizing enrollee use of Part B services and PPO providers, and (3) semi-annual status reports which will include data on enrollments and disenrollments, narrative discussions of accomplishments, problems, and changes implemented, and a statistical report presenting data on service utilization and financial performance.

Secondary data sources include: (1) the Area Resource File, which contains data on the socioeconomic and health care environment of each county in the United States, (2) county AAPCC rates available from HCFA, and (3) data from HCFA's Office of Prepaid Health Care on the number of Medicare HMOs and Medicare HMO enrollment levels in each city.

ANALYTIC METHODS

BCBS/AZ offers two Medicare insurance products: Senior Preferred, the demonstration PPO which is linked to a Mcdigap plan, and Senior Security, a standard Mcdigap plan. The Senior Preferred demonstration began on January 1, 1990. Beneficiaries who enrolled in Senior Preferred between January 1, 1990 and April 1, 1990 will be compared to (1) enrollees in Senior Security as of April 1, 1990 and (2) a random sample of beneficiaries in Mariwpa and Pima counties who arc not enrolled in Senior Preferred.

CAPP CARE is a nonenrollment model PPO in Orange County, California which began on April 1, 1990. Beneficiaries use CAPP CARE whenever they visit a CAPP CARE demonstration network physician; there is no formal enrollment in CAPP CARE The beneficiary sample will be classified into four groups based on claims data during the post-implementation period: (1) users of demonstration CAPP CARE providers, (2) users of non-demonstration CAPP CARE providers, (3) users of non-CAPP CARE providers, and (4) users of a combination of these.

The major methodological approaches that will be used in the evaluation include:

- Descriptive analysis of site visit data, quarterly reports, and telephone interviews for the implementation analysis

- Examination of responses from the structured discussion groups to obtain in-depth insights into beneficiary awareness and choice of the PPO option

- Statistical analysis (t-tests) to determine whether there are statistically significant differences between enrollees (users of PPO demonstration providers) and nonenrollees (users of non-demonstration providers) in the mean values of use and cost measures

- Regression analysis to estimate the impact of each PPO on service utilization and Medicare expenditure&

The statistical and regression analyses of beneficiary choice, biased selection, and use and cost of services will be conducted in two stages: an interim analysis and a final analysis. Both analyses will examine the same issues and use the same methodology, the same beneficiary samples, and the same baseline (pre-implementation) period. The baseline period for the interim 'and final analyses will be the two year period prior to the demonstration start dates: calendar years 1988 and 1989. The final analysis will extend the interim analysis by analyzing sample members' cost over a longer follow-up (post-implementation) period. For both BCBS/AZ and CAPP CARE the follow-up period will be April 1, 1990 through March 31, 1991 for the interim analysis, and it will be one year longer (April 1.1990 through March 31, 1992) for the final analysis.

SCHEDULE

Key dates for the demonstration and evaluation are as follows:

Evaluation Design	February 14, 1990
Revised Evaluation Design to reflect changes in scope of work	November 26, 1991
Status Report Plan	February 14, 1990
Status Reports	August, 1990 - December 1992, every six months
Site Visits	May - July, 1990; Spring 1991; June 1992
Telephone Interviews	December 1990; December 1991; November 1992
Implementation Report	
Part 1	August 1990
Part2	July 1991
Final Implementation Report	
Draft	January 1992
Final	March 1992

Conduct beneficiary discussion groups	May 1991
Preliminary Report on Beneficiary **Choice**	June 1991
Interim Report on Beneficiary **Choice,** Biased Selection, and Use and Cost of **Services**	
Draft	**May 1992**
Final	July 1992
Report on Feasibility Analysis	
Draft	June 1993
Final	September 1993
Final Report on Beneficiary Choice, Biased Selection, and Use and Cost of **Services**	
Draft	June 1993
Final	August 1993

I. INTRODUCTION

To assess the operational feasibility of the Medicare PPO concept, the Health Care Financing Administration (HCFA) awarded a contract to Mathematica Policy Research in June 1989 to evaluate the Medicare physician PPO demonstration. The objectives of this evaluation are to determine the operational feasibility of the Medicare PPO concept, to identify operational problems that require resolution before expansion of the demonstration or implementation of a permanent program, and to assess the initial impact of the PPO demonstration on beneficiaries and providers, use and costs of services, and on Medicare program costs. In addition, the evaluation will involve a broad assessment of the feasibility of a national voluntary enrollment Medicare PPO program and of selected features of the PPO utilization management approach for application to the Medicare program generally.

Five PPOs were initially selected to participate in the demonstration. Two of these (CAPP CARE and Blue Cross and Blue Shield of Arizona) are operational, one (Family Health Plan) expects to become operational in January 1992, and two (HealthLink and Northwest Managed Health Care) withdrew from the demonstration before becoming operational.

The evaluation has two principal components: 1) an assessment of the implementation experience of the demonstration PPOs, and 2) an evaluation of site-specific impacts of the demonstration.

The implementation analysis will document the experience of the PPOs and HCFA in implementing the demonstration, and will describe the organizational and operational characteristics of the PPOs and the market area in which they operate. All five PPOs initially selected for the demonstration will be included in the implementation analysis. For those that never became operational, the analysis will document the steps that were taken toward implementation and their reasons for withdrawing from the demonstration.

The implementation analysis will be much more comprehensive than originally planned due to greater than anticipated interest in Medicare PPOs. The modified implementation analysis is described in Chapter III of this Design Report. This examination of the implementation and operational experience will be supplemented throughout the evaluation by semi-annual Status Reports on the demonstrations, based on site visits, interviews, and reviews of documents and reports submitted by the PPOs. These Status Reports wig provide a base of information that can be used in interpreting the results of the site-specific studies, as well as preparing the Fmal Implementation Analysis Report.

The site-specific evaluations to be conducted include an analysis of beneficiary choice and biased selection into the demonstration and an analysis of impacts on use and costs of services. These analyses will be conducted on the two operational PPOs and the PPO that plans to become operational in January 1992. These site-specific studies require data on beneficiaries' reasons for choosing to enroll or not to enroll in the PPO demonstration, data on beneficiaries' prior use of Medicare services, and data on use of services during the demonstration period. The analysis of beneficiary choice will include analysis of data collected from a set of structured discussions with beneficiaries to explore issues of enrollment and provider choice. Under the contract modification these structured discussions replace the telephone surveys which were originally specified. The analysis with structured discussion groups is described in Section D of Chapter IV.

The statistical comparison-group analysis will be conducted with individual-level Medicare beneficiary data on demographic characteristics and use and cost of services with data from HCFA and the carriers. Only annual summary Part B data for physicians services are available from HCFA data files for all sample members during the entire analytic time period. Thus, as indicated in the contract modification, we will use claims-level Part B data from the carriers in our analysis of use and cost. The full claims based data are described in Section C of Chapter II and in Chapter V.

The statistical comparison-group analysis will include both a beneficiary-based analysis and a physician-based use and cost analysis. It is worth noting that the CAPP CARE demonstration site requires a different approach to the analysis of choice/selection and use and cost impacts than Blue Cross and Blue Shield of Arizona (BCBS/AZ) since CAPP CARE is a non-enrollment model demonstration; in BCBS/AZ beneficiaries must choose to enroll in the demonstration. The beneficiary-based analysis for BCBS/AZ will compare the use and cost of services of PPO enrollees to those of a comparison group of beneficiaries who are as similar as possible to the PPO enrollees except that they are not enrolled in the PPO. The beneficiary-based use and cost analysis of CAPP CARE will compare beneficiaries in Orange County who primarily or exclusively use demonstration CAPP CARE providers to (1) beneficiaries in Orange County who primarily or exclusively use non-demonstration CAPP CARE providers and (2) beneficiaries in Orange County who primarily or exclusively use non-CAPP CARE providers. Since CAPP CARE is a nonenrollment model PPO, within-site comparisons for CAPP CARE may be less definitive than those for enrollment model PPOs, since the beneficiary population in this site is not clearly segmented into enrollee and nonenrollee categories. Thus, beneficiaries in the demonstration site (Orange County) will also be compared to beneficiaries in an external comparison site (San Diego County).

The physician-based analysis will determine whether and to what extent PPO network physicians have more cost-effective practice patterns than non-network physicians. It will be conducted only if we are able to uniquely identify the rendering physician on each Part B claim. The approach we will use to conduct the physician-based analysis is described in Chapter V, Sections E and F.

The feasibility analysis of the demonstrations will be conducted during the final year of the project and will focus on:

- Administrative costs
- Medicare program costs
- Provider participation issues

These analyses will require extensive data from the demonstration PPOs and HCFA, including (1) PPO data on administrative costs, by type of cost; (2) HCFA data on health care expenditures over time in the demonstration sites; (3) data from HCFA and the PPOs on Medicare beneficiary characteristics and participation in the demonstration over the demonstration period; and (4) data from HCFA and the PPOs on providers in the demonstration sites, including characteristics such as physician specialty, hospital privileges, and Participating Physician status, and on their participation in the demonstration over time.

In the next chapter of this Design Report, the overall research design for the evaluation is described, including a discussion of comparison methodologies, data sources, and sample design. Chapter III presents the plan for the implementation analysis of the demonstration programs. The analysis of site-specific impacts and experiences of the demonstration PPOs is detailed in Chapters IV and V. The approach to the analysis of each site's experience with respect to beneficiary choice and biased selection into the demonstration is presented in Chapter IV. Chapter V contains a detailed discussion of the plan for the site-specific analysis of impacts of the demonstration on use and costs of services. In Chapter VI, our approach to the assessment of the feasibility and desirability of the PPO concept for Medicare is presented.

The analyses of the administrative costs of the demonstrations, tbe impact of the demonstrations on Medicare program costs, and the behavior of providers participating in the demonstration are contained in Chapter VII. Chapter VIII contains the detailed schedule of activities and deliverables for the evaluation. Finally, the analysis plan for Family Health Plan is described separately in Appendix A, since Family Health Plan is not yet operational.

II. RESEARCH DESIGN

The evaluation of the Medicare Physician PPO Pilot Demonstration is being conducted to determine the operational feasibility of the Medicare PPO concept, to identify operational problems that rquire resolution before expansion of the demonstration or implementation of a permanent program, and to assess the initial impacts of the demonstration. To address these objectives requires a comprehensive evaluation design that will permit examination of the experience of each unique demonstration site, as well as overall evaluation of the impact of the PPO intervention across all sites. The design we have developed for this evaluation includes a case study component to examine, issues pertaining to the implementation and operational experience of the PPOs, and various statistical analyses of individual-level data to examine issues of biased selection and impacts on the use and cost of services. Our approach to the case study component of the evaluation is described in Chapter III. In this chapter, we provide an overview of the design for analyses of individual-level data, focusing on appropriate comparison methodologies, required data sources, and sample design issues.

A. OVERVIEW

Because of the variation across sites in both the nature and the timing of the PPO intervention, the research design for this evaluation must be tailored to the unique circumstances of each site. An overview of the three sites participating in the demonstration is provided in Table II.1. Although these PPOs vary along a number of dimensions that must be accounted for in the evaluation, the PPO characteristic that has particularly important implications for the overall research design for this study concerns the distinction between enrollment model and nonenrollment model PPOs.

In a demonstration site containing an enrollment model PPO, beneficiaries have the opportunity to formally enroll in the PPO and then, once enrolled, are free to decide on a service-by-service basis whether to use a PPO or non-PPO provider. The enrollee is subject to the PPO's utilization management procedures only when he or she uses a PPO provider. Blue Cross and Blue Shield of

TABLE II.1

PPOs PARTICIPATING IN THE DEMONSTRATION

PPO	Site	PPO Model Type	Start Date
Blue Cross and Blue Shield of Arizona	Phoenix/Scottsdale, AZ	Enrollment model (offered as a Medigap plan)	January 1, 1990[a]
CAPP CARE	Orange County, CA	Nonenrollment model	April 1.1990
Family Health Plan	Minneapolis/St. Paul, MN	Enrollment model (currently in planning stages)	January 1, 1992 (Projected)
CareMark	Three counties in the Portland, Oregon area.	Three Plans: (1) Individual enrollment (2) Medigap PPO (3) Nonenrollment model to Public Employees Retirement Systems beneficiaries	Withdrew from the demonstration in 1990
HealthLink	St. Louis, MO	Enrollment model	Withdrew from the demonstration in 1990

[a] Although Blue Cross and Blue Shield of Arizona began enrolling beneficiaries in its Medigap plan in late 1988, HCFA regards the official demonstration start date in this site as January 1, 1990.

Arizona is offering an enrollment model PPO linked with a Medicare supplemental insurance plan, and the PPO which is in the planning stage (Family Health Plan) is also expected to offer an enrollment model PPO. In contrast, CAPP CARE is participating in the demonstration as a nonenrollment model PPO. As a nonenrollment model PPO, CAPP CARE will not enroll any beneficiaries, but instead applies its utilization management procedures each time a Medicare beneficiary in the demonstration site uses a provider affiliated with the PPO network. Two PPOs withdrew from the demonstration in 1990: CareMark (which was going to serve three counties in the Portland, Oregon area) and HealthLink (which was going to serve the St. Louis, Missouri area).

The analysis of beneficiary, choice, biased selection, and use and cost of services will focus on the two operational PPOs (BCBS/AZ and CAPP CARE). If Family Health Plan (the PPO in the planning stages) becomes operational and if HCFA decides to include this PPO in the evaluation of beneficiary choice, biased selection, and use and cost of services, our design for Family Health Plan will be similar to that of BCBS/AZ since both are enrollment model PPOs. The design plan for Family Health Plan (e.g., the definition of analytic time periods) is contained in Appendix A.'

B. COMPARISON METHODOLOGIES

In this section, we discuss the comparison methodologies that will be used in this study to conduct the analyses of beneficiary choice, biased selection, and impacts on the use and cost of services, The discussion below is organized into two sections to describe our approach to the evaluation of BCBS/AZ (the enrollment model PPO) and CAPP CARE (the nonenrollment model PPO).

'The implementation analysis will include all five PPOs. For the two PPOs that dropped out (CareMark and HealthLink), the implementation analysis will discuss the steps they took in developing the PPO and why they decided to withdraw.

1. **BCBS/AZ**

BCBS/AZ offers two Medigap insurance products in Maricopa and Pima counties: Senior Preferred, the demonstration Medigap PPO, and Senior Security, a standard Medigap policy. The evaluation of Senior Preferred, the demonstration PPO offered by BCBS/AZ, will be based on a comparison-group methodology involving three groups of Medicare beneficiaries: (1) enrollees in Senior Preferred, (2) enrollees in Senior Security, and (3) beneficiaries in Maricopa and Pima counties not enrolled in Senior Preferred ("nonenrollees"). The role to be played by these three groups in each component of the evaluation is described below.

Beneficiary Choice and Biased Selection. The analysis of beneficiary choice and biased selection for Senior Preferred will examine two aspects of the choices facing beneficiaries in this site:

- The choice to enroll in the demonstration
- The choice to use PPO or non-PPO providers, once enrolled

Understanding the enrollment decision and measuring the nature and extent of biased selection will be important to this evaluation for several reasons. Fiit, understanding the reasons that Medicare beneficiaries choose to enroll or not enroll in a PPO, and the specific PPO design features regarded by beneficiaries as most attractive and unattractive, will be useful to HCFA as it considers the feasibility and desirability of expanding enrollment model PPOs into additional sites. Second, understanding the nature and extent of biased selection will provide an important foundation for the use and cost analysis. As described below, use and cost impacts will be estimated by comparing the experience of enrollees during the post-enrollment period with that of a comparison group consisting of either Senior Security enrollees or nonenrollees. If enrollees are systematically different from members of the comparison group in their propensity to use health care services, then comparisons of the post-enrollment experience of the two groups will yield biased estimates of PPO impacts unless a proper methodology to control for biased selection is employed. Finally, an understanding of the

types of beneficiaries enrolled in the PPOs will be useful in interpreting the results of the use and cost analysis and extrapolating the findings beyond the demonstration. For example, in assessing whether the cost savings achieved under the demonstration provide a reliable guide to the savings that could be achieved by applying the PPO's utilization management techniques on a broader scale, it is important to know whether the beneficiaries participating in the demonstration are representative of the Medicare population generally, or whether they are weighted more heavily toward low users or high users of care.

To assess the nature and extent of biased selection in Senior Preferred, Senior Preferred enrollees will be compared to Senior Security enrollees and nonenrollees in Maricopa and Pima counties with respect to various baseline measures thought to be associated with future service use. These include demographic characteristics available from the Health Insurance Skeleton Eligibility Write-Off File (HISKEW) and measures of the use and cost of services prior to the demonstration. In addition, PPO enrollees will be examined to determine the percent who have previously been enrolled in a Medicare HMO. This information on beneficiary switching from HMOs to PPOs will provide insights into the extent to which the open network concept of a PPO is more attractive to an elderly population than the closed network of an HMO.

Issues of beneficiary choice will be addressed by conducting a set of structured discussions with small groups of Senior Preferred enrollees, Senior Security enrollees and nonenrollees. The Senior Preferred discussion groups will explore a wide range of issues regarding enrollees' sources of information about the PPO, their primary reasons for joining, their understanding of the PPO benefits, and the specific features of the PPO they found most attractive. The Senior Security and nonenrollee discussion groups will address issues such as awareness and understanding of the PPO demonstration, reasons for not enrolling, and potential willingness to consider enrolling in a PPO in the future. While the beneficiaries in each group will be selected to be representative, their small

numbers will not support formal statistical analysis or hypothesis testing. The data will instead be used to conduct an in-depth descriptive analysis of the relevant issues.

The final component of the beneficiary choice analysis will investigate enrollees' choice of provider following enrollment. This is an important issue for the evaluation, since PPOs can constrain Medicare costs through their various utilization management techniques only for patients who receive care within the PPO network. Thus, to the extent that enrollees go outside the network to receive care, the PPO's ability to constrain costs will be diminished. To investigate this aspect of beneficiary choice, claims for Senior Preferred enrollees in the post-enrollment period will be examined to determine the percent of claims and reimbursements that are for services rendered by PPO and non-PPO providers, and to determine whether there are any particular types of services or physician specialties for which enrollees are more likely to go outside the PPO network. In addition, to provide a profile of the types of beneficiaries who tend to use PPO providers once enrolled, the characteristics and prior use of Senior Preferred enrollees who obtain most (or all) of their care from PPO providers will be examined and compared with those of enrollees who obtain care primarily from non-PPO providers. Finally, the structured discussions with beneficiaries described above will investigate the factors which influence the decision by enrollees to use PPO or non-PPO providers.

Use and Cost Impacts. To contain costs for its private sector PPO (Preferred Care), BCBS/AZ uses physician profiling and traditional utilization review. BCBS/AZ hopes to contain costs for Senior Preferred by selecting Senior Preferred network physicians from Preferred Care. To assess the effectiveness of Senior Preferred in constraining costs, the following two major questions will be addressed:

- What is the impact of Senior Preferred on enrollees' utilization of services?
- What is the impact of Senior Preferred on total Medicare costs for enrollees?

To address these two questions, we must compare the use and cost experience of Senior Preferred enrollees in the period following enrollment to an estimate of what this group would have experienced in the absence of the demonstration. In the classical approach to program evaluation, program impacts are estimated by comparing outcomes for a treatment group and a control group which have been formed through random assignment. The advantage of a randomized design is that the treatment group and control group do not differ systematically, and an unbiased estimate of program impacts can thus be obtained through a straightforward comparison of outcomes for the two groups. However, since the Medicare PPO Demonstration is not based on a randomized design, the estimation of use and cost impacts must proceed through a nonrandom comparison group methodology. In the discussion that follows, we consider the advantages and disadvantages of two potential comparison groups for estimating use and cost impacts in the enrollment model PPOs: (1) nonenrollees in the demonstration sites, and (2) beneficiaries in a set of external comparison sites.

The primary advantage of the nonenrollee sample as a comparison group is that nonenrollees reside in the same market area as enrollees and are thus subject to the same health care environment. Thus, site-specific factors which may affect the outcome variables of interest are held constant. In contrast, reliance on an external comparison group introduces the risk that differences in outcome variables due to cross-site differences in physician practice patterns, beneficiary characteristics, or general market conditions will be confounded with demonstration impacts, leading to biased estimates. In principle, this risk can be lessened by selecting comparison sites which are closely matched to the demonstration sites on a range of relevant baseline characteristics, and by statistically controlling for cross-site differences in use and cost patterns prior to the demonstration.

Procedures to statistically control for differences between demonstration and comparison sites would rely on the assumption that differences in the levels and trends in service use and cost prior to the demonstration provide a reliable guide to the differences that would exist in the demonstration period in the absence of the PPO intervention. However, there may be other factors, independent

of the PPO intervention, that will affect use and cost patterns differently in the demonstration and comparison sites during the demonstration. For example, implementation of the Medicare physician payment reforms during the demonstration may have different effects on service use and cost across sites and, if so, such effects could not be disentangled from the effects of the demonstration. A variety of other site-specific changes during the demonstration, such as changes in local economic conditions, entry or exit of Medicare HMOs, and cost-containment initiatives in the private sector, could also be confounded with the effects of the demonstration.

In general, these limitations associated with an external comparison methodology are lessened in evaluations which involve a relatively large number of demonstration and comparison sites, and which seek to estimate impacts for all demonstration sites combined rather than site-specific impacts. With a large number of sites, the likelihood is increased that the group of demonstration sites as a whole will be similar to the group of comparison sites, since differences between site pairs in a large sample will tend to be offsetting. However, in the present evaluation, we have a relatively small number of sites and seek to estimate impacts on a site-specific basis. In this context, the risk of obtaining biased impact estimates because of cross-site differences of the type described above is especially high

The potential disadvantage of relying on the nonenrollee sample as a comparison group is that the demonstration may have a significant indirect or "spillover" effect on the demonstration site, thereby "contaminating" the nonenrollee sample. A spillover effect may occur if non-PPO providers in the market area or other market participants, such as Medicare supplemental insurers, alter their behavior to compete with the PPO. If this occurs to a significant degree, then the PPO intervention may influence the service use and cost of all beneficiaries in the demonstration site-i.e., nonenrollees as well as enrollees. In practice, however, a sign&ant spillover effect is not likely unless Senior Preferred enrolls a significant share of the local Medicare population, or are perceived by other market participants as being capable of doing so. Since Senior Preferred enrolled less than 6,000

beneficiaries during its first two years of operation, it appears unlikely at this point that the PPO intervention will have significant spillover effects.

Based on these considerations, we believe that the limitations of the external comparison methodology are more severe than the potential limitations of the nonenrollee comparison methodology, and therefore recommend that the nonenrollee sample serve as the comparison group for the use and cost analysis of BCBS/AZ. It is worth noting that MPR has successfully employed this type of comparison methodology in a similar study, the Evaluation of the Medicare Competition Demonstration, to evaluate the use and cost impacts of Medicare HMOs. A nonenrollee comparison methodology is also being employed in the use and cost analysis in our ongoing Evaluation of the TEFRA HMO/CMP Program.

Two comparison groups are potentially available for the analysis: (1) Senior Security enrollees, and (2) nonenrollees. Ideally, the comparison group should be as similar as possible to Senior Preferred enrollees in terms of the propensity to use health care services. We will select either Senior Security enrollees or nonenrollees as the comparison group for the analysis, depending on which of the two is found to be most similar to Senior Preferred enrollees in terms of demographic characteristics and prior use and cost of services.

To evaluate the use and cost impacts of Senior Preferred, we will compare the post-enrollment use and cost of Senior Preferred enrollees to the experience of the comparison group over the same period; using statistical methods to control for differences between the groups in the propensity to use health care services (i.e., biased selection). Control variables to be used in the analysis include demographic characteristics available from the HISKEW file (e.g., age, sex, and raw) and measures of service use and cost during a two-year period prior to the demonstration.[2] The measures of prior use and cost are designed to control for differences between enrollees and nonenrollees in both health status and "tastes" for health care. Tastes for care include, among other things: (1) the

[2]Measures of economic status such as income are not available in the HISKEW file.

individual's preference for seeking care from a physician who practices a conservative rather than aggressive style of medicine, and (2) the individual's "threshold" for seeking care (i.e., whether the person seeks care at the first sign of illness, or only when a serious illness develops).

Physician-Based Analysis. The objective of the physician-based analysis is to determine whether and to what extent PPO network physicians have more cost-effective practice patterns than non-network physicians. To do this we will construct profiles of practice patterns of PPO and non-PPO physicians for the baseline period and the demonstration period, to conduct pre/post comparisons for the physician groups.

BCBS/AZ is not using any traditional utilization review procedures or physician profiling for the demonstration. Instead, it is attempting to contain Part B costs by selecting Senior Preferred physicians from its Preferred Care physician network, since Preferred Care providers should be cost-effective.[3] Since BCBS/AZ is not using traditional utilization review or physician profiling for Senior Preferred, the BCBS/AZ demonstration is not expected to change the way demonstration physicians treat their Medicare patients. Thus, instead of indicating the effects of the demonstration on physician behavior, the physician-based analysis of Senior Preferred will provide information about the selection of physicians into the Senior Preferred network

CAPP CARE, on the other hand, is applying utilization review screens that are designed to change the way CAPP CARE physicians treat their Medicare patients under the demonstration. Thus, the physician-based analysis for CAPP CARE will provide insights into the effects of the demonstration. A detailed discussion of the methodology for the physician-based analysis for both BCBS/AZ and CAPP CARE is contained in the section on the physician-based analysis for CAPP CARE.

[3] Preferred Care is BCBS/AZ's private sector PPO. Preferred Care network physicians are profiled; physicians with claims costs that greatly exceed the norm are investigated and warned, and those who do not modify their behavior are dropped from the network

2. CAPP CARE

CAPP CARE is participating in the demonstration as a nonenrollment model PPO, which means that the PPO will not enroll any beneficiaries, but instead will apply its utilization management procedures each time a Medicare beneficiary in the demonstration site uses a provider affiliated with the PPO network The methodology described above for evaluating enrollment model PPOs is not applicable to CAPP CARE, since beneficiaries in this site cannot be segmented into "enrollee" and "nonenrollee" categories.

Our approach to evaluating CAPP CARE will rely on both beneficiary-based and physician-based analyses. The beneficiary-based analyses will employ a comparison-group methodology involving the following two samples:

- Beneficiaries in the demonstration site
- Beneficiaries in an external comparison site

The sample in each site will be representative of all beneficiaries in that site. The analysis of beneficiary choice and biased selection will involve comparisons within the demonstration site to examine the choice by beneficiaries to use demonstration CAPP CARE, non-demonstration CAPP CARE, and non-CAPP CARE providers. The beneficiary-based analysis of use and cost impacts will involve two types of comparisons: (1) comparisons within the demonstration site to determine whether beneficiaries who use demonstration providers are treated less expensively than those who use non-demonstration providers, and (2) comparisons of the pre/post change in service use and cost in the demonstration site to the corresponding change in the external comparison site.

The use of an external comparison methodology for this analysis suffers from the same limitations described above in our discussion of enrollment model PPOs, and thus is not designed by itself, to yield an unbiased estimate of PPO impacts. Our decision to recommend an external comparison methodology for this site stems from the fact that the within-site comparisons for CAPP CARE may

be less definitive than those for the enrollment model PPOs, since the beneficiary population in this site is not clearly segmented into enrollee and nonenrollee categories. Given the lack of an explicit enrollment decision and the relatively weak incentives offered by CAPP CARE to use CAPP CARE demonstration physicians, we may observe a relatively large number of beneficiaries who receive substantial amounts of care from both demonstration and non-demonstration providers, which will introduce some ambiguity as to how we define the "demonstration user" and "non-demonstration user" groups. The effects of the demonstration may be spread over a relatively large number of beneficiaries in the CAPP CARE site, whereas they are expected to be focused primarily on enrollees in the case of an enrollment model PPO. Given the potential for greater market-wide impacts, and the potential limitations of the within-site comparisons, we believe that including an' external comparison group in the analysis will provide additional information that will be useful in assessing CAPP CARE's effects on service use and cost.

The beneficiary-based analysis within the demonstration site will compare Orange County beneficiaries who obtain all (or most) of their care from demonstration CAPP CARE providers to (1) Orange County beneficiaries who obtain all (or most) of their care from CAPP CARE providers who are not participating in the demonstration and (2) Orange County beneficiaries who obtain all (or most) of their care from non-CAPP CARE providers. The analysis of beneficiary choice and biased selection will involve comparisons to examine the choice by beneficiaries to use demonstration, non-demonstration CAPP CARE, and non-CAPP CARE providers. The beneficiary-based analysis of use and cost impacts will compare beneficiaries who use non-demonstration providers to determine whether beneficiaries who use demonstration providers are treated less expensively than those who use non-demonstration providers.

The physician-based analysis for CAPP CARE will be conducted with the same methodology used in the analysis for BCBS/AZ. In the analysis for CAPP CARE we will compare three groups of physicians:

- CAPP CARE demonstration network physicians
- CAPP CARE network physicians practicing in Orange County who are not participating in the demonstration
- Non-CAPP CARE physicians practicing in Orange County.

We are comparing these three groups of Orange County physicians because CAPP CARE demonstration physicians are subject to utilization review screens for both their Medicare and non-Medicare patients, while CAPP CARE non-demonstration physicians are subject to utilization review screens only for their non-Medicare patients. Thus, comparing demonstration CAPP CARE physicians to non-demonstration CAPP CARE physicians will provide additional insights into the effect of the Medicare screens.[4]

Beneficiary Choice and Biased Selection. For CAPP CARE, the analysis of beneficiary choice and biased selection will focus on the choice of beneficiaries in the demonstration site to use PPO or non-PPO providers. We will examine the number and type of beneficiaries in the demonstration site who fall within the following four categories: users of demonstration CAPP CARE providers, users of non-demonstration CAPP CARE providers, users of non-CAPP CARE providers, and users of a combination of these. These samples will be compared with respect to demographic characteristics available on HISKEW file and use and cost of services prior to the demonstration. We will also examine the percent of all claims and all reimbursements in the demonstration site that are for 'services rendered by demonstration CAPP CARE providers, and will examine whether there are any specific types of services or physician specialties for which beneficiaries in this site are more likely or less likely to use demonstration CAPP CARE providers. This analysis requires that we classify sample members 'in the demonstration site into subgroups based on whether they use

[4]BCBS/AZ conducts intensive physician profiling and traditional utilization review for its non-Medicare PPO, but not for its Medigap PPO. Since Senior Preferred network physicians are recruited from the BCBS/AZ non-Medicare network, BCBS/AZ believes that this gives them a cost-effective network for Senior Preferred.

demonstration PPO or non-demonstration providers. One approach to defining these subgroups is to define demonstration PPO users as beneficiaries for whom all Part B reimbursements during the demonstration are for services rendered by demonstration PPO providers, and to define non-demonstration users analogously. Alternatively, each sample can be defined as beneficiaries for whom a large proportion (e.g., greater than 75 percent) of Part B reimbursements are for services rendered by the respective providers. We will experiment with both approaches to test the sensitivity of the analytic results to these alternative definitions.

We will also examine issues of provider choice through structured discussions with beneficiaries comparable to those discussed above for BCBS/AZ. In this site, separate discussions will be held with beneficiaries who obtain care primarily from demonstration PPO physicians and those who obtain care primarily from non-demonstration physicians. Beneficiaries in each group will be questioned about their awareness and understanding of the demonstration, and the factors which influence their choice of physician

Use and Cost Impacts. The beneficiary-based analysis of use and cost impacts in the CAPP CARE site will address the following questions:

- Do beneficiaries in the demonstration site who use demonstration PPO providers incur lower costs than those who use nondemonstration providers, after controlling for biased selection?
- How does the pre/post change in service use and cost in the demonstration site compare with the corresponding change in the comparison site?

The first question will be addressed through various comparisons of beneficiaries in the demonstration site who obtain all (or most) of their care from demonstration PPO providers and those who (1) use non-demonstration CAPP CARE providers exclusively (or most of the time) and (2) those who use non-CAPP CARE providers exclusively (or most of the time). These three groups will be compared to determine whether there are any systematic differences between the three in service use and cost following demonstration start-up. The analysis will control for any differences

between the three groups in demographic characteristics and prior use and cost of services. Thus, this component of the analysis is comparable to that described above for the enrollment model PPOs, except that the three groups to be compared are defined on the basis of their choice of provider rather than on the basis of an enrollment choice.

In the physician-based use and cost analysis we will compare practice patterns of CAPP CARE demonstration physicians to CAPP CARE non-demonstration physicians and physicians who are not in the CAPP CARE network To do so we will need claims data in the baseline and follow-up period that (1) contains procedure codes for each claim and (2) identifies CAPP CARE demonstration physicians, CAPP CARE physicians who are not in the demonstration, and physicians who are not in the CAPP CARE network.[5] In the discussion that follows, we first describe how the analysis would be conducted in the absence of any data limitations. Next, we discuss our current state of knowledge concerning data limitations and describe the implications of these limitations for the analysis. We conclude by discussing plans for conducting a further investigation of the relevant data issues, to determine whether the analytic approach outlined below can be implemented.

Assuming the required data were available, the physician-based analysis would proceed by constructing profiles of demonstration and non-demonstration physicians in both the baseline period and the demonstration period These physician profiles would characterize the practice patterns of physicians in terms of the number of specific diagnostic and therapeutic procedures performed per Medicare beneficiary treated (or per encounter with a Medicare beneficiary). To account for the fact that the specialty composition of demonstration physicians may differ from that of non-demonstration physicians, the profiles would be constructed on a specialty-specific basis. This would enable us to compare, for example, the practice patterns of demonstration PPO cardiologists with those of non-demonstration cardiologists. We would also control for possible differences between demonstration and non-demonstration physicians in patient case-mix One approach we would employ to control

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'Although we do not need diagnosis codes to conduct the physician-based analysis, if we had diagnosis codes we would be in a better position to control for case mix.

for differences in case-mix is to compare the treatment patterns of demonstration and non-demonstration physicians within a given specialty for patients with a given diagnosis. In addition, we would examine whether the Medicare patients of demonstration and non-demonstration physicians differ with respect to demographic characteristics (e.g., the percent over age 80, the percent female), and if so, control for such differences using multivariate techniques.

To measure the effects of the demonstration on the practice patterns of CAPP CARE demonstration physicians, it is essential that we have data on demonstration network physician and nondemonstration physician practice patterns in both the baseline period and the demonstration period. Baseline data are essential for this analysis, since differences between demonstration and non-demonstration physician practice patterns during the demonstration may result from two factors: (1) the effects of the demonstration on PPO physicians, and (2) biased selection of physicians into the PPO. Biased selection among physicians is likely, since physicians who join a PPO are expected to be more likely than other physicians to have a preference for practicing a conservative style of medicine. Thus, even in the absence of any demonstration effects, we might expect PPO physicians to be more cost effective in their practice than non-PPO physicians. Without baseline data on physician practice patterns prior to the demonstration, it is impossible to disentangle the effects of biased selection from the effects of the demonstration.

Implementing the approach to the physician-based analysis outlined above would require collecting all Part B claims for physician services in the BCBS/AZ site during a specified baseline period and demonstration period, and then matching each claim to the physician who provided the services. In principle, this should be straightforward since Part B claims contain a provider identification number. In practice, however, the provider identification system for Part B claims has some important limitations which may seriously impede our ability to conduct the physician-based analysis. The information presented below has been obtained through numerous discussions with staff

at HCFA's Bureau of Data Management and Strategy (BDMS) and Office of Demonstrations and Evaluations.[6]

In December 1989 HCFA implemented a new identification system for Part B claims based on the Unique Physician Identification Number (UPIN), which is intended to permit the identification of the individual physician corresponding to each claim, According to HCFA staff, the UPIN will be a mandatory data item on Part B claims in January 1992.

Representatives from the carriers have told us that we should be able to uniquely identify physicians on Part B claims data in Arizona (sometimes the physicians' social security number is used), and that physicians in California have been uniquely identified with state license codes since April 1, 1989.'

Presumably, prior to April 1, 1989, physicians in California were identified by a system of office billing numbers, which is how physicians have historically been identified on Part B claims. Office billing numbers do not always permit the identification of individual physicians, since (1) some physicians have multiple billing locations, and hence multiple identification numbers, and (2) in some cases, multiple physicians bill under a single number. These limitations of a provider identification system based on billing numbers prompted the development of the UPIN system.

The claims data 'will contain procedure codes during the pre-implementation and post-implementation periods. Diagnoses codes should be on all claims for services rendered in Orange County as of October 1, 1989 and on all claims for services rendered in Arizona as of May 1, 1990.

[6]Our information on the provider identification system for, Part B claims is also derived from a report MPR prepared for the Physician Payment Review Commission on the availability of Medicare Part B data to support an expenditure target policy (Carlton and Langwell, 1989). Information for this report was obtained from interviews with staff of BDMS and various other divisions within HCFA

'Physician state license codes were mandated as of April 1, 1989, but there may be a small lag between April 1, 1989 and the time these codes were actually reported.

3. Selecting a **Comparison Site for CAPP CARE**

Since CAPP CARE is **a** nonenrollment **model** PPO, within-site comparisons for CAPP CARE may be less definitive than those for enrollment model **PPOs** like Senior Preferred, since the beneficiary population is this site is not clearly segmented into enrollee and nonenrollee categories. Furthermore, the effects of the demonstration may be spread over a relatively large number of beneficiaries in Orange County, whereas they are expected to be focused primarily on enrollees in Senior Preferred. Thus, including an external comparison group in the analysis will provide additional information that will be useful in assessing CAPP CARE's effects on service use and cost.

The comparison site selected should be closely matched to the **CAPP** CARE demonstration site. The objective is to select a comparison site which is as similar as possible to Orange County on **a** range of characteristics relevant to Medicare. Characteristics relevant to Medicare include:

- Part A reimbursements per beneficiary
- Part B reimbursements per beneficiary
- Medicare discharges per 1000 beneficiaries
- Medicare days per 1000 beneficiaries
- Number of' physicians per 1000 population
- Percent of the population that is White
- Percent of the population that is Black
- Percent of the population residing in an urban area
- Percent of population over age 65 that are below the poverty level
- Number of Medicare beneficiaries
- Per capita income
- **TEFRA HMO** enrollment

Data for these variables (except TEFRA HMO enrollment) were collected from the Area Resource File for 17 counties.[8] Subsequent to an analysis of these data, we found that two counties-Santa Clara County and San Diego County-were both very similar to Orange County. (The choice of one county would be a "toss-up.") Since we can readily obtain Part B claims data from the carrier for San Diego County but not for Santa Clara County, the comparison site will be San Diego County.

The selection process occurred in two stages. In the first stage data were collected for all 17 counties and for all variables (except TEFRA HMO enrollment).[9] A short list of six counties was selected by identifying the counties that minimized the sum of the deviations each variable is from the respective variable value from Orange County as follows.[10]

1. Let

   X_c = value of variable X for county c

   STD_x = standard deviation of variable X for all 18 counties (the 17 potential comparison counties and Orange county)

   X_{orange} = value of variable X for Orange county

   ABS( ) = the absolute value function

2 For all 17 wunties and 11 variables we calculated the number of standard deviations Xc is from X_{orange}:

$$DEVIATION_x = ABS(X_{orange} - X_c)/STD_x$$

As DEVIATION, for county c approaches zero, the value of variable X for county c approaches X_{orange}

[8]The 17 counties included all counties in the states of California, Oregon, Washington, Nevada, and Utah with a population of at least 500,000.

[9]The 17 wunties were: Alameda, Contra Costa, Fresno, Kern, Los Angeles, Riverside, Sacramento, San Bemadino, San Diego, San Francisco, San Mateo, Santa Clara, Ventura, Clark, Salt Lake, King, and Pierce. We did not collect TEFRA HMO enrollment data for all 17 counties because TEFRA HMO enrollment data by county are costly to obtain.

"Standard deviations were used so that all variables would be in the same metric.

3. For each county we summed the number of deviations each variable was from the respective variable value for Orange county:

$$SUMDEV_c = \sum_{x=1}^{11} DEVIATION_{x,c}$$

The counties that are the most similar to Orange county will be the counties with the lowest SUMDN values.

The five health care variables--Part A and Part B reimbursements per beneficiary, Medicare discharges and Medicare days per 1000 beneficiaries, and the number of physicians per 1000 population-were given more weight than the remaining six variables.

The six counties that were the most similar to Orange County were: Contra Costa, Sacramento, San Bemadino, San Diego, Santa Clara, and Ventura.

In the second stage of the selection process TEFRA HMO enrollment data for the short list of six counties were considered in addition to the data considered in the first stage.[11]

When TEFRA HMO enrollment data are considered in addition to the 11 variables collected from the Area Resource File, the two counties that are the most similar to Orange County are San Diego county and Santa Clara county. Santa Clara county ranks third with respect to the health care variables and first with respect to all 11 variables; it matches poorly with respect to TEFRA enrollment. San Diego county ranks seventh with respect to the health care variables and second with respect to all 11 variables, and is an excellent match to Orange county in TEFRA enrollment.[12]

In Table IL2 data for all variables are summarized for Orange, San Diego, and Santa Clara Counties.

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[11] TEFRA HMO enrollment data were not collected for all 17 counties because these data are more costly to collect.

[12] Kern and Alameda counties ranked one and two, respectively, on the health care variables, but ranked 10 and 9, respectively, on the eleven variables from the Area Resource File.

TABLE XI.2

COMPARISON SITE SELECTION:
ORANGE, SANTA CLAW, AND SAN DIEGO COUNTIES'

Variable	Orange County	Santa Clara County	San Diego County
Part A reimbursements per beneficiary	1760 (0)	1662 (0.418)	1546 (0.911)
Part B reimbursements per beneficiary	1333 (0)	982 (1.942)	1142 (1.056)
Medicare discharges per 1000 beneficiaries	321 (0)	309 (0.343)	274 (1.288)
Medicare days per 1000 beneficiaries	2430 (0)	2356 (.0197)	2186 (0.656) ,
Number of physicians per 1000 population	2.53 (0)	273 (0.171)	2.32 (0.180)
Percent of population that is White	87.20 (0)	79.60 (0.903)	81.90 (0.630)
Percent of population that is Black	130 (0)	330 (0.446)	5.60 (0.960)
Percent of population residing in an urban area	99.70 (0)	97.70 (0.286)	9320 (0.929)
Percent of population over age 65 that are below the poverty level	6.10 (0)	6.14 (0.024)	6.71 (0369)
Number of Medicare beneficiaries	214,089 (0)	123,960 (0.483)	260,564 (0.249)
Per Capita Income	21,444 (0)	21,510 (0.019)	16,633 (1381)
TEFRA HMO enrollment per 1000 beneficiaries	198 (0)	2 (1.86)	178 (0.19)
DEVIATXON score for 6 health care variables	(0)	(4.98)	(4.29)
DEVIATION: Stage 1 variables	(0)	(5.23)	(8.61)
DEVIATION: All 12 variables	(0)	(7.09)	(8.80)

SOURCE March 1990 Area Resource File

'The number of standard deviations away from the value for Orange County is indicated in parentheses.

C. DATA SOURCES

In this section, we provide an overview of the data sources to be used in the evaluation. The major data sources include: (1) individual-level data from HCFA and the carriers, (2) enrollment and financial data to be obtained from the PPOs, (3) site visit data, and (4) a set of structured discussions with beneficiaries. These data sources and the major data elements to be obtained from each are described below.

1. Individual-Level Data from HCFA and the Carriers

The major types of individual-level data we will require from HCFA and the carriers are as follows:

- The Health Insurance Skeletal Eligibility Write-off (HISKEW) File will provide the frame for drawing the nonenrollee and external comparison samples, and will be the source of data on basic demographic characteristics for the entire sample.
- The Medicare Automated Data Retrieval System (MADRS) will be the source of data on sample members' use and cost of services in the pre-implementation period.
- Claims data from the carriers will provide more detailed information on Part B service use during the pre-implementation period than is available from MADRS.
- Data on Part A and Part B service use and cost by sample members in the post-implementation period will be obtained from the Common Working File.

The HISKEW file is an extract of the Health Insurance Master File, HCFA's main membership file of Medicare beneficiaries. The file contains identification, demographic, and eligibility data on every individual covered by Medicare. The HISKEW file will be used in this evaluation as the frame for drawing the nonenrollee sample and the external comparison sample. The HISKEW file will also be the source of data on demographic characteristics for the entire sample, including enrollees. The following information will be obtained from the HISKEW file for each sample member: age, sex, race,

Medicaid eligibility, reason for entitlement (age, disability, or ESRD), original reason for entitlement, and county of residence.[14]

Chums data from the period prior to the demonstration are required for both the biased selection analysis and the use and cost analysis. One source of such data will be the MADRS file, which contains bill and claims data for the full range of Part A and Part B services for the entire Medicare population. The MADRS file contains very detailed data on Part A service use, but is very limited with respect to Part B. The only information on physician services on the file is total Part B reimbursement. No information is available on the use of specific diagnostic or therapeutic procedures. This is an important limitation for this evaluation, since one of the means by which PPOs may reduce Medicare costs is through a reduction in the use of expensive Part B procedures. Baseline data on the use of such procedures would significantly enhance our ability to measure PPO impacts on use and cost. We will therefore supplement the MADRS data with Part B claims data obtained directly from the carriers. Such claims data will contain detailed information on the use and wst of the full range of procedures covered under Part B.

Part B claims data for the interim analysis of CAPP CARE will be obtained from the carrier (for both the pre-implementation and post-implementation periods). Part B claims data after July 1, 1991 (for the final analysis of CAPP CARE) will be obtained from the wmmon working file. Part B claims data for Arizona for 1988 through 1990 will be obtained from Health Economics Research, Inc. (HER). HER obtained 100 percent claims data for Arizona for 1988 and 1989 from the carrier and edited these data to eliminate duplicate and reprocessed claims and to convert local procedure codes to the HCFA common procedure coding system (HCPCS codes). HER has requested 1990 data from Aetna, and during the next several months will be editing these data also. Part B claims data for Arizona after 1990 will be obtained from the wmmon working file.

[14]Measures of economic status, such as income, are not included in the HISKEW file.

2. Data from the PPOs

The PPOs will be required to submit several types of data to support the evaluation. First, since HCFA is not monitoring enrollments and disenrollments of individual beneficiaries under the demonstration, we obtained from BCBS/AZ data identifying beneficiaries who have enrolled. These data will be provided in machine-readable form BCBS/AZ was requested to submit such data at the outset of the demonstration and thereafter on a quarterly basis. Each data submission should identify all beneficiaries currently enrolled as well as those who have disenrolled. Individuals should be identified by HIC number, date of birth, and sex. Each individual's date of enrollment and disenrollment (where applicable) must also be provided These data will be used to construct a frame for drawing the enrollee sample and to identify enrollees who disenroll during the demonstration.[15]

The PPOs will also be required to submit quarterly reports summarizing their operational experience. These reports will consist of two parts: (1) a narrative discussion of accomplishments, problems, and any changes implemented; and (2) a statistical report presenting data on enrollments, service utilization, and financial performance. These data will be incorporated in the status reports and will be used in the analysis of administrative costs.[16]

3. **Site Visit Data**

Data on the implementation and ongoing operational experience of the demonstration PPOs will be obtained through site visit interviews to be conducted annually by MPR staff Site visit data will be used for the case study components of the evaluation, and to provide background information which will be useful in interpreting results of the analyses of beneficiary choice, biased selection, and impacts on the use and cost of services. Our approach to conducting the site visits and the site visit schedule are discussed below in Chapter III.

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[15] In October 1990 we received enrollment data from BCBS/AZ; in March 1991 we received additional enrollment data.

[16] To date only CAPP CARE has submitted quarterly reports.

4. Structured Discussions With Beneficiaries

To obtain detailed information on issues of beneficiary choice, we will conduct a set of structured discussions with small groups of beneficiaries in each site. The discussion groups will each consist of approximately 10-12 participants. The discussion group format will enable us to obtain in-depth information on beneficiaries' awareness, knowledge, attitudes, and experiences relating to the demonstration

In the case of BCBS/AZ, discussions will be conducted separately with Senior Preferred enrollees, Senior Security enrollees, and nonenrollees. Enrollees will be questioned about their sources of information about the PPO, their reason for enrolling, their understanding of the PPO benefits and incentives, their satisfaction with the PPO, and their provider choice in the period following enrollment. Nonenrollees will be questioned about their awareness and knowledge of the demonstration, their reasons for not enrolling, and their willingness to consider enrolling in the future. For CAPP CARE, the two separate discussion groups will consist of beneficiaries who receive care from demonstration providers and those who receive care from non-demonstration providers. Since beneficiaries in this site do not face an enrollment choice, the discussions will focus on awareness and knowledge of the demonstration and issues of provider choice. Our approach to conducting the structured discussions with beneficiaries is described in detail in Chapter IV.

D. SAMPLE DESIGN

To conduct the analysis of beneficiary choice, biased selection, and impacts on service use and cost, we require samples of individual beneficiaries in each demonstration site. Different sampling methods will be required for evaluating CAPP CARE and BCBS/AZ. In this section, we discuss our approach to selecting the sample in each site, and then discuss the size of the samples to be selected.

The sampling plan described below has been developed to provide samples for interim and final analyses of beneficiary choice, biased selection, and use and cost impacts. The interim analysis of beneficiary choice, biased selection, and use and cost of services will be included in the Interim

Report on Beneficiary Choice, Biased Selection, and Use and Cost of Services, due in draft form in May 1992. The Interim Report is a deliverable that was proposed to provide HCFA with interim results prior to the final analysis. The final analysis of choice/selection and the analysis of use and cost impacts will be included in the Final Report on Beneficiary Choice, Biased Selection, and Use and Cost of Services, due in draft form in June 1993.

Each of these analyses requires data on sample members' service use and cost during a specified baseline (pre-implementation) period. In addition, the use and cost analysis and the analysis of choice/selection each rquire use and cost data for sample members during a specified follow-up (post-implementation) period.

1. Sample Selection for **CAPP CARE**

Since CAPP CARE is a nonenrollment model PPO, beneficiaries in the demonstration site do not enroll in the PPO. Instead, beneficiaries in this site are, in effect, "enrolled" in the demonstration when the demonstration is implemented. That is, following the implementation of the demonstration, beneficiaries in this site will be subject to the PPO's utilization management procedures each time they use a PPO provider.

The comparison methodology we have developed for evaluating CAPP CARE requires that we draw a representative sample of beneficiaries in the demonstration site and a representative sample in the comparison sites. Claims data will be obtained for each sample member for a specified pre- and post-implementation period. The sample will be drawn randomly from the population of beneficiaries covered by Medicare at the start of the demonstration. The random sample drawn in the demonstration site will be followed during a specified post-implementation period to identify beneficiaries who (1) use demonstration CAPP CARE providers, (2) use nondemonstration CAPP CARE providers, (3) use non-CAPP CARE providers, and (4) use a combination of these.

The pre-implementation period for CAPP CARE will be specified as January 1, 1988 through December 31, 1989. Our reason for specifying a two-year pre-implementation period is that it will

enable us to examine both the level and the trend in service use and cost for sample members prior to the demonstration for the analysis of beneficiary choice and biased selection. To ensure that claims data for the pre-implementation period are available for the entire sample, the sample will be restricted to beneficiaries who were at least 65 years of age at the start of the baseline period,

Prior use and cost data for the analysis of biased selection will be obtained from the MADRS file for calendar years 1988-89. After the sample is drawn, claims data from the MADRS file will be matched to individuals in the sample using identifying information on the claim (HIC number, sex, and date of birth).

For the interim analysis the post-implementation period will begin at the start of the demonstration (April 1, 1990) and end one year later (March 31, 1991). For the final analysis the post-implementation period will begin on the start date of the demonstration and extend through March 31, 1992. The post-implementation period for the final analysis will thus be a period of two years, which will enable us to examine whether there are any changes over time in the percent of beneficiaries in this site who seek care from PPO providers and any changes in the effects of the demonstration on service use/cost.

2. Sample Selection for BCBS/AZ

To evaluate BCBS/AZ, we must select a sample of treatment group beneficiaries (enrollees in Senior Preferred) and comparison group beneficiaries (beneficiaries who are not enrolled in Senior Preferred). The treatment group will include all beneficiaries who enrolled in Senior Preferred during a specific sample intake period. The baseline period will be the two year period prior to the sample intake period, and the follow-up period wig begin at the end of the intake period.

The definition of these time periods for CAPP CARE is straightforward since CAPP CARE is a nonenrollment model PPO which began operations on April 1, 1990. The baseline (pre-implementation) period for CAPP CARE is calendar years 1988-1989. The follow-up periods begin

on April 1, 1990 and end one year later (March 31, 1991) for the interim analysis and end two years later (March 31, 1992) for the final analysis.

Defining the analytic time periods for Senior Preferred is not as straightforward because Senior Preferred is an enrollment model PPO which has been enrolling beneficiaries for over two years. Although HCFA regards January 1, 1990 as the official start date of the Senior Preferred demonstration, beneficiaries began enrolling in Senior Preferred in late 1988." From January 1, 1989 through October 31, 1990, 5,643 beneficiaries enrolled in Senior Preferred. For 5,364 of these Senior Preferred enrollees we were able to match the beneficiary identification numbers used by BCBS/AZ to the beneficiary identification numbers in the HISKEW file. Of the 5,364 enrollees that we were able to match to the HISKEW file:

- 662 (12 percent) enrolled between January 1, 1989 and December 31, 1989 (the year before the demonstration began)
- 3,994 (74 percent) enrolled between January 1, 1990 and April 1, 1990 (between the start of the BCBS/AZ demonstration and the start of the CAPP CARE demonstration)
- 708 (13 percent) enrolled between April 2, 1990 and October 31, 1990.

The dramatic increase in enrollment between January 1, 1990 and April 1, 1990 was largely due to a letter BCBS/AZ sent to their Senior Security enrollees informing them of the large price differential between Senior Security and Senior Preferred subsequent to the repeal of the Medicare Catastrophic Act. A high percent of the enrollees during the first three months of 1990 were beneficiaries who switched from Senior Security to Senior Preferred. In defining the analytic time periods for BCBS/AZ, we need to address the following key questions:

- Should the sample be restricted to beneficiaries who enrolled in 1990, or should the 662 beneficiaries who enrolled in 1989 (before the demonstration started) also be included?

[17]Two beneficiaries were enrolled in Senior Preferred as of December 31, 1988.

- Should we use the same sample intake period for both the interim and final analyses?

a. **Options for Defining the Sample Intake Period for the Interim Report**

For the interim analysis the BCBS/AZ enrollee sample will include beneficiaries enrolled in Senior Preferred as of April 1, 1990, and the follow-up period will be from April 1, 1990 through March 31, 1991. This is the same follow-up period that will be used for the interim analysis of CAPP CARE. The key issue to address in defining the sample intake period for Senior Preferred is whether the sample should be restricted to 1990 enrollees. Following is a brief discussion of two available options: (1) including the 1989 enrollees in the main enrollee sample, and (2) conducting the main portion of the analysis with enrollees who joined the PPO between January 1, 1990 and April 1, 1990 and conducting a more limited analysis on a supplemental sample of 1989 enrollees.

The first option is to include the 1989 enrollees in the main enrollee sample by defining a sample intake period of January 1, 1989 through April 1, 1990. Of the 4,656 beneficiaries who enrolled in Senior Preferred during this period, 662 (14 percent) enrolled in 1989.

Under the first option the baseline period can no longer be defined as 1988-89, but must be redefined as 198788. An alternative approach, defining a one year baseline period (1988) instead of a two year baseline period, would significantly weaken the analysis because a two year baseline period provides more information on sample members' prior health status and enhances our ability to control for selectivity bias in estimating use and cost impacts. Also, since we are using a two year baseline period for CAPP CARE, we should use the same methodology for BCBS/AZ. Thus, if we include 1989 enrollees in the same sample, the baseline period should be 1987-88.

This option has at least two potential advantages. First, including 1989 enrollees in the main enrollee sample would increase the sample size (but by a small amount). Second, including 1989 enrollees might yield a more representative sample. Beneficiaries who enrolled in early 1990 (after the significant increase in the price differential between Senior Preferred and Senior Security) may be very different from those who enrolled in 1989 in terms of health status, demographic

characteristics, and "tastes" for care, and they may not be representative of the beneficiaries who would enroll under a mature program. However, the number of 1989 enrollees is so small relative to 1990 enrollees that the experience of the sample would be dominated by the 1990 enrollees.

The major disadvantages of the first option stem from the need to define the baseline period as 1987-1988 rather than 1988-89. For the nearly 4,000 beneficiaries who enrolled in early 1990, shifting the baseline period to 1987-88 increases the gap between the baseline period and the follow-up period, which may weaken the statistical relationship between costs in the two periods. That is, it may diminish our ability to predict the costs enrollees would have incurred in the follow-up period in the absence of the PPO. Furthermore, moving the start of the baseline period one year earlier will mean that some of the 1990 enrollees who would have been included in the sample under a 1988-89 baseline period will now be excluded because the sample will be restricted to beneficiaries who were at least 65 years of age at the start of the baseline period. (This restriction will be imposed to ensure complete claims data on all sample members throughout the baseline period.) With a sample intake period of January 1, 1989 through April 1, 1990, and a baseline period of 1987-88, approximately 300 of the beneficiaries who enrolled during the intake period will be eliminated because they were not at least 65 years old on January 1, 1987. This will leave us with a sample of approximately 4,350 beneficiaries.

The second option is to conduct the main portion of the biased selection, beneficiary choice, and use and cost analysis on enrollees who joined the PPO in 1990. For the interim analysis, we would define a sample intake period of January 1, 1990 through April 1, 1990, when 3,994 beneficiaries enrolled in the PPO. The baseline period for this sample would be 1988-89. Under this option we would also define a supplemental sample of the 662 beneficiaries who enrolled in Senior Preferred in 1989. The supplemental sample could be used to investigate whether and to what extent. the beneficiaries who enrolled in 1989 differ from those who enrolled in 1990. Using reimbursement data from 1987 and 1988, we could test whether there are any differences between the prior

reimbursements of the supplemental sample (enrollees during calendar year 1989) and the primary sample (enrollees between January 1, 1990 and April 1, 1990). We could also conduct a limited physician choice analysis on the supplemental sample

Given the considerations above, we believe the advantages of the second option outweigh those of the first option. Thus, we will define the sample intake period for the interim analysis as January 1, 1990 through April 1, 1990, and conduct limited analysis with a supplemental sample of beneficiaries who enrolled in Senior Preferred during calendar year 1989.

b. Defining the Sample Intake Period for the Final Analysis

The interim analysis can be extended for the final analysis in one of two ways:

- Use the same sample intake period for the interim analysis and the final analysis, and extend the follow-up period one year for the final analysis. Thus, the sample intake period for the final analysis would be January 1, 1990 through April 1, 1990 and the follow-up period would be April 1, 1990 through March 31, 1992.
- Increase the length of the sample intake period to include all beneficiaries who enrolled in calendar year 1990, and define the follow-up period as January 1991 through March 1992.

The first approach has three major advantages. First, it uses a two year follow-up period, which would enable us to examine the effects of the PPO over a longer period of time. Second, it uses the same follow-up period as our analysis of CAPP CARE, which would enhance our ability to draw cross-site comparisons. Third, it involves using the same sample for the final analysis and the interim analysis, which would greatly reduce our costs for data file construction. The disadvantage of the first approach is that the sample is restricted to beneficiaries who enrolled in the PPO in early 1990, who may not be representative of the beneficiaries who would enroll in a more mature program.

The second approach would increase the sample size and is likely to increase the representativeness of the sample. However, the increase in the sample size under the second

approach is modest (only 708 beneficiaries enrolled in the PPO between April 2, 1990 and October 31, 1990), reflecting the fact that most Senior Preferred enrollees enrolled in early 1990.

Since a relatively small percentage of beneficiaries enrolled in Senior Preferred after April 1, 1990, we plan to adopt the first approach, which involves using the same sample intake period for both the interim and final analyses.

Table IL3 summarizes our approach to defining the analytic time periods in each site for each of these analyses. For both sites there will be a one year follow-up period (April 1, 1990 through March 31, 1991) for the interim analysis. Ending the follow-up period by March 31, 1991 is necessary to meet the November 1991 deadline for the Draft Interim Evaluation Report. We will request claims data in July 1991 (when approximately 95 percent of the claims during the follow-up period should be filed), and spend four months constructing the analysis file, conducting the analysis, and preparing the Draft Interim Report.

For the final analysis there will be a two year follow-up period from April 1, 1990 through March 31, 1992 for both sites. We plan to obtain follow-up claims data by June 1992, which will allow us four months to construct the analysis file, conduct the analysis, and prepare the Draft Final Report.

As mentioned above, two restrictions will be imposed on the sample. Fiit, because we rquire claims data on each sample member for the two-year baseline period, we will exclude from the sample any beneficiaries who are not at least 65 years of age at the start of the baseline period. In addition, we will exclude beneficiaries who were enrolled in a Medicare HMO during the baseline period, since claims data would not be available for such individuals. Prior HMO enrollees will be identified from the HISKEW file and Health Insurance Printout (HIPO) file. The HISKEW file indicates whether a beneficiary has been enrolled in an HMO, and the HIPO file indicates when the beneficiary was enrolled. Information on the number of prior Medicare HMO enrollees in each PPO will thus be available to examine issues regarding switching from HMOs to PPOs.

TABLE II.3

ANALYTIC TIME PERIODS FOR THE MEDICARE PPO EVALUATION

	CAPPCARE	BLUE CROSS AND BLUR SHIELD OF ARIZONA
1. Demonstration Start Date	April 1, 1990	January 1, 1990
2 Interim Analysis		
Sample Intake Period	Beneficiary Samples based on physician visits during followup period*	January 1, 1990 - April 1, 1990
-Baseline Period	1988-89	1988-89
--Followup Period	April 1, 1990 - March 31, 1991	April 1.1990 - March 31.1991
3. Final Analysis		
-Sample Intake Period	Beneficiary Samples based on physician visits during followup period*	January 1, 1990 - April 1, 1990
-Baseline Period	1988 -89	1988-89
--Followup Period	April 1, 1990 - March 31, 1992	April 1, 1990 - March 31, 1992

*Using claims data from the follow-up period, we will classify the beneficiaries as users of demonstration CAPP CARE providers, users of nondemonstration CAPP CARE providers, users of non-CAPP CARE providers, and users of a combination of these. The users of CAPP CARE demonstration providers wiil be identified from a list of all beneficiaries who have seen a CAPP CARE demonstration physician at least once. (CAPP CARE will give us this list)

3. Sample Size

In this section, we discuss the size of the various samples to be used in the evaluation. We begin by discussing sample sizes for evaluation of BCBS/AZ and then turn to CAPP CARE

a. Claims Sample for BCBS/AZ

The claims sample will be used in the evaluation of BCBS/AZ to (1) compare Senior Preferred enrollees, Senior Security enrollees, and nonenrollees with respect to age, sex, Medicaid status, and prior use and cost for the analysis of beneficiary choice and biased selection., and (2) to estimate PPO impacts on the use and cost of services. To support these analyses, we will compare beneficiaries who enrolled in Senior Preferred from January 1, 1990 through April 1, 1990 (there are approximately 3,800 enrollees during this period who were at least 65 at the start of the baseline period) to equal-sized samples of (1) enrollees in Senior Security and (2) beneficiaries in Pima and Maricopa counties who are not enrolled in Senior Preferred. This strategy will enable us to conduct site-specific analyses with an acceptable Ievel of statistical precision.

To illustrate the degree of statistical precision offered by 3,800 observations, consider a test of whether the enrollee and nonenrollee samples within a site differ in some attribute expressed as a proportion-e.g., the proportion hospitalized or the proportion who receive a particular surgical procedure. For a variable such as the proportion hospitalized, for which the expected mean is approximately 0.2, the power of the sample to detect enrollee-nonenrollee differences as small as 3 percentage points within a given site is 91 percent (at the .05 significance level for a two-tailed test). The power to detect a 4 percentage point difference is 99 percent, Thus, we can be very confident of detecting relatively small differences for variables expressed as proportions.

The precision offered by the sample in detecting enrollee-nonenrollee differences in Medicare reimbursements is lower, due to the much greater variance in reimbursements. The power to detect a difference in mean reimbursement of 15 percent is 75 percent (again, using a two-tailed test at the

.05 significance level).[18] A 20 percent difference in reimbursement can be detected with 94 percent power. It should be recognized, however, that these estimates understate the precision of the sample to estimate PPO impacts on service use and cost, since the unexplained variance will diminish once control variables such as age, sex, and prior use are used to predict use and cost in the demonstration period.

b. Claims Sample for CAPP CARE

The analysis of CAPP CARE will compare Orange County beneficiaries who use CAPP CARE demonstration physicians to beneficiaries who use (1) non-demonstration CAPP CARE providers, (2) non-CAPP CARE providers, and (3) a combination of these.

We conducted a zip code analysis of the 72,291 beneficiaries who had visited a CAPP CARE physician at least once (as of August 30, 1990) and found that approximately 25 percent of these beneficiaries reside outside of Orange County. As of May 21, 1991, 99,198 beneficiaries had visited a CAPP CARE demonstration physician at least once. Thus, we estimate that approximately 75,000 Orange County beneficiaries have visited a CAPP CARE demonstration physician at least once. We will examine the Part B claims data of these 75,000 beneficiaries to identify all the beneficiaries who primarily use demonstration physicians. The users of CAPP CARE demonstration physicians will be those beneficiaries who have at least 75 percent of their Part B reimbursements from demonstration physicians. Random samples of users of non-demonstration CAPP CARE physicians, users of non-CAPP CARE physicians, and users of a combination of these, will also be drawn,

We will not know how many users of CAPP CARE demonstration physicians we will End until after we have analyzed the claims data. Thus, we indicate the power of the sample to detect a difference in mean reimbursements for several sample sizes.

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[18]This calculation assumes a mean reimbursement for the nonenrollee sample of $2,281, which was the approximate mean for the national Medicare population- in 1987, the last year for which published data are available. The calculations also assume a coefficient of variation for Medicare reimbursement of 2.5, which is what Mathematica Policy Research has found in analyses of claims data for other evaluations.

For a sample of 5,000 beneficiaries, the power of the sample to detect enrollee-nonenrollee differences as small as 3 percentage points for the proportion hospitalized is 96 percent. The power to detect a 4 percentage point difference is 99 percent. The power to detect a difference in mean reimbursement of 15 percent is 85 percent (using a two-tailed test at the .05 significance level).” A 20 percent difference in reimbursement can be detected with 98 percent power.

With a two-tailed test at the .05 significance level, a 10 percent difference in reimbursements can be detected with a sample size of approximately 13,000 beneficiaries (80 percent power), a 7 percent difference in reimbursements can be detected with a sample size of approximately 26,700 beneficiaries (80 percent power), and a 5 percent difference in reimbursements can be detected with a sample size of approximately 52,550 beneficiaries (80 percent power).

The four physician user groups will be defined separately for the interim analysis and the final analysis because the beneficiaries may have changed their physician visitation patterns during the last year of the follow-up period.[20]

[19]This calculation assumes a mean reimbursement for the nonenrollee sample of $2281, which was the approximate mean for the national Medicare population in 1987.

[20]The post-implementation period for the interim analysis is April 1, 1990 through March 31, 1991 while the post-implementation period for the final analysis is April 1, 1990 through March 31, 1992.

III. IMPLEMENTATION ANALYSIS

A. OVERVIEW AND OBJECTIVES

Using case study methodology, we will identify and examine the process through which each of the PPOs implemented (or tried to implement) the demonstration, including the strategic decisions that were made and the problems that were identified and resolved. This case study approach, in conjunction with related quantitative analyses, will ensure a thorough examination of the experiences of the PPOs in implementing and operating the demonstration.

This chapter presents our approach to conducting the implementation analysis, with the major objectives being:

- To descriie the organizational and operational characteristics of the demonstration PPOs and the market areas in which they operate
- To descriie and evaluate the demonstration implementation experiences of the PPOs
- To evaluate the operational status of the demonstration after the initial six months

All five PPOs originally selected for the demonstration will be included in the implementation analysis, including those that withdrew before becoming operational. For the PPOs that withdrew, the implementation analysis will describe the steps that were taken toward implementation and their reasons for withdrawing.

The next section of this chapter presents the research questions to be addressed in this analysis. Section C discusses our analytical approach, and Section D describes the data sources for the case study analysis. Section E presents the schedule for the implementation analysis and associated reports.

B. RESEARCH QUESTIONS

A number of specific research questions will be addressed through the implementation analysis. The purpose of the first set of questions is to provide detailed, baseline information on the demonstration PPOs, from both an organizational and operational perspective:

- What are the organizational and operational characteristics of the PPOs participating in the demonstration?
- What are the characteristics of the market areas in which the demonstration PPOs operate?

This descriptive information will provide a foundation for all subsequent analyses.

As part of a comprehensive assessment of the capability of the PPOs to participate in the Medicare program, it is essential that we examine the implementation experiences of the participating organizations. The following are the key questions to be addressed:

- Who were the key decisionmakers? What were the considerations underlying the decision to enter into the market?
- What strategic planning decisions were made in order to implement the demonstration (marketing, for example)?
- What problems arose during the implementation process? How were they resolved?

This analysis will focus primarily on the administrative and operational behavior of the PPOs in response to the opportunity to enter the Medicare market, within the context of other environmental changes simultaneously taking place.

PPOs will make progress towards enrollment goals at varying rates. Furthermore, they will employ divergent approaches and solutions to the problems and opportunities posed by PPO participation in the Medicare program. An additional objective of the implementation analysis is to assess the operational status of the PPOs in terms of meeting the program goals. The primary questions to be addressed are:

- What is the operational status of the PPOs after the first six months of the demonstration? How are the PPOs progressing to meet demonstration goals, including the success/failure of the PPOs in enrolling beneficiaries; disenrollment experiences; provider participation; utilization and financial experiences; quality assurance activities; and market responses?

- What problems have the PPOs experienced in complying with HCFA's requirements for reporting and review? How has the PPO interaction with the carrier, intermediary, and Regional HCFA offices proceeded?

In addition, we will attempt to identify factors that account for variations in PPO operational status, strategies, and priorities.

C. ANALYTIC APPROACH

The methods to be used to address these research questions include qualitative case studies and descriptive analyses based on established process analysis techniques, including the systematic collection and preparation of process data. A case study of the implementation experiences and operational characteristics will be prepared for each of the pilot demonstration PPOs. These qualitative data will be analyzed for each site and compared across the five PPO demonstrations, both operational and non-operational In this section, we discuss the analytic approach to, and our plans for, collecting and synthesizing data for the following research areas: (1) analysis of the demonstration PPO characteristics; (2) analysis of the PPO demonstration implementation experiences; and (3) analysis of the ability of the demonstration PPOs to meet demonstration goals.

1. Analysis of the Demonstration PPO Characteristics

To provide a comprehensive framework for this and subsequent analyses, we will first identify and assess the PPO organizational factors and strategies that may affect performance and outcomes under the demonstration. Descriptions of each of the PPOs will be prepared that provide a base of information on the structural characteristics such as origin and sponsorship, size and composition of provider network, size of patient network, number of years in operation, and management organization. Other baseline information pertinent to demonstration operation such as the utilization

review/case management mechanisms, quality assurance programs, financial arrangements, and benefit structure and incentives also will be documented. The different characteristics of these organizations may explain or impact on their differential experiences under the demonstration.

We will also examine the market area characteristics that might affect PPO performance under the demonstration. Such characteristics include primarily: (1) indicators of the competitiveness of the health care market, such as the number and type of competing health plans (i.e., HMOs, CMPs, and other PPOs), number of physicians, number of staffed hospital beds per capita, and AAPCC level; and (2) characteristics of the Medicare beneficiary population, such as income, health services utilization, and extent of supplementary insurance coverage. Table Shell III.1 illustrates how such data will be arrayed for comparison.

2. Analysis of the PPO Demonstration Implementation Experiences

Specific information on how and why key demonstration entry and implementation decisions were made by the PPOs, the factors that affected these decisions, and what has been learned since these decisions were originally made will be analyzed and summarized. A related assessment of management and administrative strategies under the demonstration also will be conducted. In addition, detailed analysis of the marketing plans employed by the PPOs will be performed, including the examination of advertising materials and strategies. A complete description will be provided of the package offered by the demonstration PPOs, including the number and type of preferred providers and the benefits and terms of coverage offered to enrollees.

Also of great importance to the implementation analysis are the specific problems that arose during implementation and how they were resolved. Areas of particular interest include PPO interaction with the carriers and HCFA.

TABLE SHELL III.1

MARKET AREA CHARACTERISTICS OF THE DEMONSTRATION PPOs

Characteristics	BCBS of Arizona	Northwest Family HealthLink	Managed Health Care Plan	Health CAPP CARE
Total Population				
Total percentage of the population who are Medicare beneficiaries				
Per capita income				
Active physicians per 1,000 persons				
Inpatient surgeries per 1,000 persons				
Outpatient surgeries per 1,000 persons				
Medicare hospital admissions per 1,000 beneficiaries				
Medicare part A reimbursements per beneficiary				
Medicare part B reimbursements per beneficiary				

3. Analysis of the Ability of the Demonstration PPOs to Meet Demonstration Goals

Our analysis of the ability of each PPO to meet their implementation goals under the demonstration will encompass a broad range of issues. Specific topics to be addressed include: (a) provider participation; (b) enrollment experience; (c) utilization experience; (d) quality assurance activities; and (e) financial experience.

a. Provider Participation

Our analysis of the capability of the demonstration PPOs to operate in the Medicare market will begin by examining the number and types of preferred providers, including their utilization experiences and response to the demonstration. Other related factors will also be examined, including:

- The criteria for recruiting and selecting preferred providers
- The financial arrangement between the providers and the PPO and the effect of these incentives on providers' willingness to be designated as preferred
- The impact of the demonstration requirement that all preferred providers must be participating Medicare providers for their PPO enrollees
- The types and effectiveness of incentives to encourage beneficiaries to use the PPO providers

We will also consider the number of physicians who participate as preferred providers, both in absolute terms and as a percentage of all area physicians. For PPOs that did not succeed in forming a provider panel, we will examine obstacles encountered in recruiting providers.

b. Enrollment and Marketing Experiences

Projected enrollments will be compared with actual enrolhnents for the first six months of the demonstration. Individual and group enrollments will be examined separately. To supplement these statistics, we will elicit information from PPO demonstration staff about the possible reasons for discrepancies between projected and actual enrollments. In particular, we will discuss the types of

marketing strategies used and the perceptions of staff about the strengths and weaknesses of those strategies. Comparisons of initial PPO marketing strategies and impacts will be made across the demonstration PPOs. It will also be of interest to the evaluation to assess the response of the competing health plans, supplementary insurers, and the fee-for-service physicians to the Medicare PPO demonstrations.

c. Utilization Experience

Because the demonstration seeks to reduce the volume of physician services, it is important to assess the utilization experience and the enrollees' propensity to use PPO providers. Therefore, the PPOs will be asked to provide data on enrollees' utilization experience during the first six months of the demonstration. Although such information will not likely be representative of the utilization patterns that will emerge over the course of the demonstration, it will indicate whether enrollees are using services during the immediate period following enrollment.

d. Quality Assurance Activities

The provision of quality health care services is a major element of the demonstration. Creating effective mechanisms for controlling the quality of care provided by PPOs is challenging because of their unique practice patterns, special incentives, and the organizational separation between the providers and the administrative entity. Notwithstanding these difficulties, HCFA cannot be in the position of offering an alternative system for providing health care services to Medicare beneficiaries in which the quality of care may be compromised. Therefore, the objective of this analysis is to describe the QA programs and the QA activities that have been conducted by the PPOs in the initial six months of the demonstration. In addition, we will discuss how the QA programs vary across PPOs. The elements reflected in the table shell are not inclusive of all quality assurance activities; however, they do represent some of the more common QA mechanisms.

e. Financial Experience

A key measurement of the PPO's initial success/failure (or perception of this) under the demonstration is its financial status. Although there will be significant start-up costs in implementing the demonstration, it will be useful to assess the PPO's financial position after the first six months of operation of the demonstration. For example, it will be interesting to consider how much each of the PPOs spent on marketing and how successful their enrollment experience was during the initial demonstration months.

One of our objectives in examining implementation and operational patterns by these outcome measures is to identify trends and relationships which may be explored in greater depth in subsequent quantitative studies (e.g., the beneficiary choice analysis; use and cost analysis). Additional data on these outcomes will be captured throughout the demonstration, via the Status Reports, to expand on the implementation analysis.

D. DATA COLLECTION

The data to be used in the case study analysis will be drawn from four sources: (1) site visits to each PPO; (2) telephone interviews with PPO personnel and other appropriate individuals (e.g., carriers, insurers, president of the local medical society, etc.); (3) review of PPO quarterly reports and other documents on the operational components of the demonstration, including HCFA reports, progress reports, and audit-related information; and (4) market area data.

1. Site Visit Data

Site visits to support the implementation analysis will occur within the first 6 months of operation. Those plans withdrawing from the demonstration will be visited soon after their withdrawal. Detailed site visit processes and summary activities are described in the *Status Report Plan. The* Implementation Analysis Site Visit Protocol detailing the supplementary issues and questions, was prepared in November 1989.

2. Telephone Interview Data

Telephone interviews with individuals of interest to the demonstration evaluation (e.g., carriers and others) will be conducted to supplement information obtained in the site visits. These telephone discussions will be focused conversations rather than rigid interviews, and have been designed to draw out not only the desired information, but also other related information from the individual that could not have been anticipated in advance. The Implementation Analysis Site Visit Protocol also contains a detailed description of the interviewees and questions to be addressed through the telephone interview process.

3. Documentary **Information**

All available documents relevant to the demonstration will be reviewed to support the implementation analysis. While on site, the interviewers will request documentary evidence, when available, to support verbal information. In addition, the demonstration PPOs are expected to provide substantial data to support demonstration monitoring and evaluation activities. PPO adherence to demonstration reporting requirements will provide an effective way of communicating the types of problems and questions that arise, as well as being an efficient means of documenting changes in procedures and the effect of those changes. Demonstration reporting will be a continuous activity, with the PPOs providing periodic reports throughout the demonstration. Our review of documents for the implementation analysis will encompass, at a minimum:

- The PPO grant application and HCPA contract
- Prior site visit reports
- Marketing materials
- The two Quarterly Reports submitted by the PPO
- The First Status Report

4. Market Area Data

In addition to data collected from the PPOs, the implementation analysis will also require data on the characteristics of the demonstration market areas pertaining to the health care environment and the experience of providers. Identifying market area characteristics that differentiate each of the demonstration PPO market areas will be an important aspect of the market area analysis. Several sources of market area data are available:

- County AAPCC rates for the demonstration sites will be obtained from the *Federal Register.*
- Secondary data sources, such as the Area Resource File and/or the Department of Commerce's *County and City Data Book will* be used to characterize the socioeconomic and health care environment. For example, the ARF provides data on number of Medicare beneficiaries, poverty rate for the elderly population, physician supply, hospital occupancy rates, etc.

Data from all of the aforementioned sources will be carefully reviewed and synthesized for incorporation into the implementation analysis reports. The submission schedule for these reports is discussed in the following section.

E. REPORTS AND SCHEDULE

Because the demonstration PPOs did not begin operations simultaneously, and because there has been considerable delay in starting all but one of the PPOs, the implementation analysis will be contained in three reports. The first report focuses on Blue Cross and Blue Shield of Arizona. Due to the greater than anticipated interest in Medigap PPOs, this report was expanded to include an assessment of the feasbility and likely effectiveness of Medigap PPOs nationally. The second report focuses on the other four PPOs--HealthLink, CAPPCARE, Family Health Plan and CareMark. A Final Implementation Analysis Report will be prepared synthesizing the information from the first two draft reports and updating this information.

The first Implementation Analysis Report was submitted in August 1990 and the second Implementation Analysis Report was submitted in July 1991. Both of these reports also serve as the first Status Report for the respective PPOs. The Draft Fmal Implementation Analysis Report will be submitted in January 1992. A detailed schedule of all the activities and deliverables associated with the implementation analysis is presented in Table III.2.

TABLE III.2

SCHEDULE OF DELIVERABLES AND KEY EVENTS FOR THE IMPLEMENTATION ANALYSIS

Draft Implementation Site Visit Protocol	November 30, 1989
Final Implementation Site Visit Protocol	February 1990
Blue Cross and Blue Shield of Arizona Implementation Site Visit	January 1990
Implementation Analysis Report (Part I)	August 1990
First Status Report (BCBS/AZ)	August 1990
CAPPCARE Site Visit	J&e 1990
Northwest Managed Health Care Site Visit	July 1990
Family Health Plan Site Visit	July 1990
Health&k Site Visit	July 1990
Implementation Analysis Report (Part II)	July 1991
First Status Report (CAPP CARE et al.,)	July 1991
Draft Final Implementation Analysis Report	January 1992
Final Implementation Analysis Report	March 1992

IV. PLAN FOR THE ANALYSIS OF BENEFICIARY CHOICE AND BIASED SELECTION

A. INTRODUCTION

A central issue for understanding the operational feasibility of the Medicare PPO concept and for assessing the potential impact of a national program on Medicare program expenditures is Medicare beneficiary response to the availability of the PPO option. With respect to enrollment model PPOs, analysis of Medicare beneficiary choice behavior under the demonstration program will provide information on three questions related to PPO performance:

1. When a PPO option is offered to Medicare beneficiaries who are allowed to voluntarily enroll in the program, how many and what types of beneficiaries enroll?

   The attractiveness of the PPO option to Medicare beneficiaries will determine the total potential impact of the PPO intervention on Medicare program costs. If only a small number of beneficiaries enroll, then even if the PPO is extremely effective at reducing unnecessary and inappropriate health care utilization, the net effect on Medicare program costs will be very small. The evaluation will produce information on the potential of a permanent national PPO option program to reach a substantial number of Medicare beneficiaries who would voluntarily enroll.

2. Among those who enroll, what proportion of health care use is through PPO providers?

   The impact of the PPO intervention on total Medicare costs will be determined by the decisions of enrolled beneficiaries about use of PPO network physicians and other providers, as well as by the total number of enrolled beneficiaries. Even if market penetration of demonstration PPOs is substantial, the effectiveness of utilization management is only observed for those health care episodes for which the enrolled beneficiary has chosen a PPO network provider. High enrollment, low network use patterns can result in minimal impact of the PPO on utilization and costs. Understanding beneficiary provider choice behavior, with and without specific incentives to use network providers, will provide a foundation for generalizing from the demonstration experience to the potential effectiveness of a national PPO program in channeling beneficiaries to more efficient providers who reduce unnecessary and inappropriate use of services.

3. Are beneficiaries who enroll different from beneficiaries who do not enroll with respect to propensity to use health services?

   If Medicare beneficiaries who enroll in the PPO differ systematically from those who do not enroll with respect to the propensity to use health care services, then

simple comparisons of the use and cost of enrollees and nonenrollees during the demonstration will yield biased estimates of PPO impacts. Thus, understanding the nature and extent of selection bias, and controlling for such bias, is an essential component of the evaluation of the impact of the PPO demonstrations on Medicare program costs. Furthermore, information on the types of beneficiaries who enroll in the demonstration will aid in interpreting the findings of the use and cost analysis and extrapolating beyond the demonstration to predict the effects of applying the PPOs' utilization management procedures to the Medicare population generally.

A more limited set of issues will be examined for CAPP CARE, since beneficiaries in this site do not face an enrollment decision. In this site, the analysis of beneficiary choice and biased selection will focus on the decision to use PPO network physicians. The analysis of choice/selection issues for both types of models will be important to understanding the potential effectiveness of a national Medicare PPO program and will provide an important foundation for the analysis of use and cost impacts.

1. Enrollment Choices

Enrollment model PPOs offer a managed care environment, and some reduced cost sharing or other health care benefits, to beneficiaries who voluntarily join. However, these inducements are relatively weak for beneficiaries who already have Medicare supplemental insurance or are Medicaid eligible. The evaluation of beneficiary choice in the Medicare HMO demonstrations indicated that beneficiaries most likely to join an HMO were those who did not have a regular source of care, were not covered by Medicare supplemental insurance or Medicaid, and who were in the lowest income quartile. HMOs offered a much more extensive benefit package and considerably lower cost-sharing than will be available to beneficiaries with PPO options. On the other hand, enrollment in a PPO does not preclude the beneficiary from seeking care from non-PPO network providers, so beneficiaries with existing provider arrangements may still choose to join the PPO, if there are no penalties for going out of network or if the penalties are relatively small.

2. Use of PPO Network Services

Among Medicare beneficiaries who join an enrollment model PPO, the presumption is that use of PPO network services will represent the majority of their health care use, unless there are no penalties associated with the use of out-of-network services. Among the five PPOs that were selected for participation in the demonstration, the range of reported in-network physician use is from 50 percent (Northwest Managed Health Care) to 76 percent (BCBS/AZ). For hospital services, the in-network use ranges from 40 percent (CAPP CARE) to 70 percent (Family Health Plan and BCBS/AZ). However, these network use patterns are for these PPOs' under age 65 enrollees and patterns of use may be significantly different for Medicare beneficiaries who join.

3. Biased Selection in PPO Enrollment

The analysis of selection into the Medicare HMO demonstrations indicates that there was substantial favorable selection among Medicare beneficiaries who chose to join an HMO when one was available. Brown (1987) reports that Medicare beneficiaries who joined 13 of the 17 HMOs had incurred Medicare expenditures during the two years prior to joining the HMO that were only 60 to 80 percent of expenditures for nonenrollees in the same market area. In addition, age-sex adjusted mortality rates for HMO enrollees in 12 of the 17 plans were only 60 to 80 percent of expected mortality rates during the two years following enrollment in the HMOs. These results, however, do not necessarily predict the patterns of selection that may be observed in the PPO demonstration. A major reason for not joining an HMO is that beneficiaries who have a regular physician will, in most cases, End it necessary to sever that relationship to join the HMO. Beneficiaries with greater health problems, who have used more than average services in prior years, are more likely to have an ongoing physician relationship and be reluctant to terminate that relationship for financial reasons.

Enrollment in a PPO, however, does not require severing existing physician relationships, particularly in those PPOs that do not contemplate imposing penalties on out-of-network use. The beneficiary who anticipates high health care costs may be able to join the PPO, save money on out-

of-pocket costs by using a network physician for some services, and incur the same level of costs when a non-network physician with whom the beneficiary has a pre-existing relationship is used. The measurement of biased selection into the PPO demonstration is a critical issue for the evaluation. First, it will be useful to know whether PPOs attract a different mix of beneficiaries with respect to expected health care use and health status than do HMOs in this market. Second, it is necessary to adjust for selection bias to evaluate the impact of the PPO demonstration on use and costs of services by individual Medicare beneficiaries and the impact on Medicare program costs.

B. RESEARCH QUESTIONS

Separate research questions will be addressed for the enrollment model PPO (BCBS/AZ) and the nonenrollment model PPO (CAPP CARE). For BCBS/AZ, the analysis will address questions regarding (1) the decision to enroll in the PPO, (2) the decision by enrollees to use PPO versus non-PPO providers once enrolled, and (3) the nature and extent of biased selection in enrollment. For CAPP CARE the analysis will determine the proportion of beneficiaries who use PPO providers, and will compare the characteristics of those who use PPO providers and those who use non-PPO providers.

1. BCBS/AZ (Enrollment Model PPO)

For BCBS/AZ, the analysis will address the following questions regarding enrollment choice and biased selection:

- What proportion of Medicare beneficiaries join a PPO when the option is made available?
- How do PPO enrollees differ from nonenrollees with respect to demographic characteristics and prior use and cost of Medicare services?
- What proportion of PPO enrollees were previously enrolled in a Medicare HMO?
- What proportion of PPO enrollees disenroll?

- Are disenrollees different in characteristics and prior use than continuing enrollees?

In addition, the analysis will address the following questions about the decision by enrollees to use PPO versus non-PPO providers once enrolled:

- What proportion of Part B claims and Part B costs incurred by enrollees represent services rendered by PPO providers?
- Do enrollees tend to use PPO providers for certain types of services and non-PPO providers for others?
- Do the characteristics of enrollees who tend to use PPO providers differ from the characteristics of those who tend to use non-PPO providers?

In addition to the above questions to be addressed through statistical analysis of individual-level data, we will also address a number of questions regarding enrollment and provider choice using data obtained from a set of structured discussions with beneficiaries. These discussions will be held separately with enrollees and nonenrollees, and the following issues will be addressed:

- How did enrollees hear about the PPO, and what sources of information were most influential in their decision to enroll?
- Why did enrollees choose to join the PPO? What PPO design features were considered most attractive?
- How well do enrollees understand the PPO benefits and the incentives to use PPO rather than non-PPO providers?
- How do enrollees decide whether to use a PPO or non-PPO provider? How important are the incentives offered by the PPO?
- What is the level of awareness and understanding of the PPO demonstration among nonenrollees?
- Among nonenrollees who are aware of the demonstration, what are the primary reasons for not enrolling?
- Once the local PPO is fully explained, to what extent are nonenrollees willing to consider joining in the future?

- What changes in the PPO benefits would make the PPO more attractive to beneficiaries?

2. CAPP CARE (Nonenrollment Model PPO)

A more limited set of question will be examined at CAPP CARE Since beneficiaries in a nonenrollment model PPO are not faced with a formal enrollment decision, the issues cited above regarding enrollment choice are not relevant. The first set of questions to be explored in the analysis pertain to the choice of Medicare beneficiaries in these sites to use demonstration PPO versus non-demonstration PPO providers:

- What proportion of Medicare beneficiaries use demonstration PPO providers? Does this change during the course of the demonstration?
- What are the characteristics of the beneficiaries who use demonstration PPO providers, and how do they differ from beneficiaries in the same area who do not use demonstration providers?
- Do beneficiaries who are patients of demonstration PPO providers tend to use these providers exclusively?
- Are demonstration PPO providers used for certain types of services and non-demonstration providers for others?

The second set of questions will address issues regarding provider choice using data obtained from a set of structured discussions with beneficiaries comparable to those described above for the enrollment model PPOs. Discussions will be conducted separately with beneficiaries who obtain care primarily from demonstration PPO providers and those who obtain care primarily from non-demonstration providers, and the following questions will be addressed:

- To what extent are beneficiaries in each group aware of the demonstration?
- How well do the beneficiaries in each group understand the demonstration?
- What were the primary sources of information about the demonstration for beneficiaries in each group?

- To what extent have beneficiaries in the "demonstration PPO user" group changed their provider because of the demonstration?
- After the incentives offered by the PPO are fully explained, how willing are members of the "non-demonstration PPO user" group to switch to a demonstration PPO provider?
- What additionai incentives would be most effective in encouraging beneficiaries to switch to a demonstration PPO provider?

C. METHODOLOGICAL APPROACH

The analysis of beneficiary choice and biased selection will be conducted in three stages: the analysis of beneficiary choice from structured discussion groups, and the interim and final analyses of beneficiary choice, biased selection, and the use and cost of services. The results of the analysis of beneficiary choice from structured discussion groups will be presented in the Preliminary Report on Beneficiary Choice, submitted in draft form in June 1991. The results of the interim analysis will be presented in the Interim Report on Beneficiary Choice, Biased Selection, and Use and Cost of Services, due in draft form in May 1992. The interim analysis will focus on issues of enrollment choice and biased selection, and, to meet the report deadline, for BCBS/AZ it will be restricted to beneficiary enrollment decisions made through April 1, 1990. A final analysis of beneficiary choice and biased selection will be included in the Final Report on Beneficiary Choice, Biased Selection., and the Use and Cost of Services, due in draft form in June 1993. The final analysis will also examine enrollment decisions through April 1, 1990, but will include a longer follow-up period which extends from April 1, 1990 through March 31, 1992.

The remainder of this section provides an overview of our approach to addressing issues of biased selection and beneficiary choice through statistical analysis of individual-level data. The subsequent section describes our approach to conducting the structured discussions with beneficiaries, which will focus on issues such as awareness and understanding of the demonstration, reasons for enrolling or not enrolling, and factors influencing the choice of demonstration PPO versus non-demonstration providers.

1. **BCBS/AZ**

BCBS/AZ offers two Medigap insurance products in Maricopa and **Pima** counties: Senior Preferred, the demonstration Medigap PPO, and Senior Security, a standard Medigap insurance plan.

The analysis of beneficiary choice and biased selection for **BCBS/AZ** will employ **a** comparison group methodology involving three groups of beneficiaries:

- Enrollees in Senior Preferred
- Enrollees in Senior Security
- Nonenrollees in the demonstration market areas.

For the interim analysis, the Senior Preferred enrollee sample will be drawn **from** beneficiaries who enroll in the plan between January **1, 1990** and April **1, 1990** (approximately 3,994 **enrollees).**[1] The Senior Security enrollee sample will be drawn from enrollees as of April 1, 1990. The nonenrollee sample will be drawn **from** beneficiaries who are eligible to enroll in Senior Preferred during this period but do not. The interim biased selection analysis will involve constructing descriptive tables which compare Senior Preferred enrollees, Senior Security enrollees, and **nonenrollees** in **Maricopa** and **Pima** counties with respect to demographic characteristics available from the **HISKEW** file, service use and cost during the baseline period **(1988-89),** and mortality rates during the **followup** period. We will also conduct a limited analysis on 1989 enrollees.

The analysis of beneficiary choice and biased selection will also examine enrollees' choice of provider in the period following enrollment. This analysis of provider choice will be conducted on the enrollee sample drawn for the biased selection analysis, and will involve **analyzing claims data on** this sample **from** the follow-up period specified for the use and cost analysis. For the interim analysis of beneficiary choice with claims data the follow-up period will be April **1, 1990** through March 31, 1991. For the final analysis of beneficiary choice with claims data the **follow-up** period will be **a year**

'Although HCFA regards the start of the demonstration as January **1, 1990,** beneficiaries began enrolling in Senior Preferred in late 1988.

longer, ending on March 31, 1992. The analysis will examine the extent to which enrollees use PPO rather than non-PPO providers, and will compare the characteristics and prior use of those who obtain care primarily from PPO providers and those who obtain care primarily from non-PPO providers.

The final analysis of biased selection will use the same methodology and beneficiary samples that will be used in the interim analysis. The final analysis will extend the interim analysis by using a longer follow-up period. The rationale for the selection of the analytic time periods for the interim and final analyses is contained in Chapter IL

2. CAPP CARE

The analysis of beneficiary choice and biased selection for CAPP CARE will focus on issues related to the choice of demonstration PPO versus non-demonstration providers. The analysis of CAPP CARE will be based on a random sample of beneficiaries in the demonstration site at the time of demonstration startup.

Using claims data, sample members who use Part B services during the demonstration will be classified into the following four subgroups based on their choice of provider: users of demonstration CAPP CARE providers, users of non-demonstration CAPP CARE providers, users of non-CAPP CARE providers, and users of a combination of these.[2] For the interim analysis these classifications will be based on claims data for the first year of the demonstration: April 1, 1990 through March 31, 1991. For the final analysis, these classifications will be based on claims data for a year longer: April 1, 1990 through March 31, 1992 These three subgroups will be compared with respect to demographic characteristics and use and cost of services prior to the demonstration. We will also investigate whether there are any specific types of services or physician specialties for which beneficiaries in these sites are more or less likely to use demonstration CAPP CARE providers.

*Non-demonstration CAPP CARE providers are providers in CAPP CARE's private sector PPO network who are not participating in the Medicare demonstration.

The particular decision rule for classifying the beneficiaries into these four groups will be determined after reviewing the claims data. One approach to delineating these four groups is to define demonstration CAPP CARE users as beneficiaries who only use demonstration CAPP CARE providers, nondemonstration CAPP CARE users as beneficiaries who only use nondemonstration CAPP CARE providers, and non-CAPP CARE users as beneficiaries who only use non-CAPP CARE physicians. Additional approaches to defining demonstration CAPP CARE users include:

- Beneficiaries with at least 75 percent of their visits to demonstration physicians
- Beneficiaries with at least 75 percent of Part B reimbursements to demonstration physicians
- Beneficiaries with at least 75 percent of visits or reimbursements to primary care physicians who are demonstration physicians
- Beneficiaries with all primary care visits to demonstration physicians

We will experiment with these approaches to test the sensitivity of the analytic results to these alternative definitions.

D. APPROACH TO THE STRUCTURED DISCUSSIONS WITH BENEFICIARIES

The statistical analyses described in the previous section will be supplemented by analysis of data collected from a set of structured discussions with beneficiaries which will explore issues of enrollment and provider choice. In this section, we discuss the samples to be included in this analysis and our approach to implementing the structured discussions. The issues to be addressed in the discussion groups were identified in Section IV.B.

1. Samples for the Structured Discussions

The structured discussions were conducted with groups consisting of 9 to 15 beneficiaries each. We have found this to be an optimal size for such discussion groups, since it is large enough to achieve a diverse set of perspectives, yet small enough that individuals feel comfortable in actively

participating. The samples for the discussion groups were subsets of the larger samples described above. For BCBS/AZ, discussions were held separately with Senior Preferred enrollees, Senior Security enrollees, and nonenrollees. For CAPP CARE, separate discussions were held with beneficiaries who obtain care primarily from demonstration CAPP CARE providers and those who obtain care primarily from non-demonstration providers.[3]

For BCBS/AZ, we conducted the discussions with enrollees in May 1991. This was sufficiently soon after enrollment that individuals can be expected to have adequate recall about the factors that influenced their enrollment decision, yet will allow sufficient experience with the PPO to enable us to explore issues of provider choice and satisfaction. In the CAPP CARE site, where the relevant issue is provider choice rather than enrollment choice, the discussion groups were also conducted in May 1991.

In general, beneficiaries will be more likely to share their opinions and experiences in a discussion group format if the group is relatively homogeneous in terms of income class. We therefore conducted discussions separately with beneficiaries whose incomes are below the median for the Medicare population and those whose incomes are above the median. For convenience, we refer to these groups as 'low income" and "high income" groups, respectively. The data necessary to stratify the sample by income were obtained through a telephone screen.

The specific groups we included in the structured discussions are identified in Table IV.l. We conducted a total of 8 discussion groups-4 for CAPP CAFE and 4 for BCBS/AZ. For CAPP CARE, separate discussions were conducted with (1) users of demonstration PPO providers, and (2) users of non-demonstration providers. For BCBS/AZ we conducted separate discussions with (1) high income Senior Preferred enrollees, (2) low income Senior Preferred enrollees, (3) Senior Seeurity enrollees (low and high income levels), and (4) beneficiaries who are not enrolled in either Senior Preferred or Senior Security (low and high income levels). For BCBS/AZ we feel that it will be more

[3]Non-demonstration providers include both nondemonstration CAPP CARE providers and non-CAPP CARE providers.

TABLE IV.1

STRUCTURED DISCUSSION GROUPS

PPO/Number of Groups	Discussion Groups
CAPPCARE (4)	Users of Demonstration Providers -- 2 groups
	Users of Non-Demonstration Providers -- 2 groups
BCBS/AZ (4)	Senior Preferred Enrollees -- Low Income -- High Income
	Senior Security Enrollees
	Beneficiaries not enrolled in either Senior Security or Senior Preferred

effective to speak separately to the Senior Security enrollees and nonenrollees than to separate the two non-Senior Preferred groups by income. We are assuming that Senior Security enrollees will know more about Senior Preferred and may have declined an opportunity to enroll in Senior Preferred; consequently, it will be preferable to speak to Senior Security enrollees and nonenrollees separately.

2. Implementation of the Structured Discussions

The structured discussions with beneficiaries consisted of a series of open-ended questions about which the participants were encouraged to talk among themselves. While a topic guide was prepared for each session, the discussions were flexible to conform to the particular experiences and size of the group. The moderator's topic guide will pose questions in the general areas of interest outlined in Section IV.B.

The group discussions were held in conference rooms at senior centers, churches, or other locations where the respondents felt comfortable. The participants were seated around a large conference table, and refreshments were served throughout the session. The sessions lasted approximately two hours and participants were given a cash gift at the conclusion of the sessions. Each session was attended by the discussion group moderator and one additional member of the research team who served as an observer. All of the sessions were tape-recorded and transcribed to aid in the analysis.

E. DATA SOURCES

There are seven sources of data for the analysis of beneficiary choice and biased selection:

- The HISKEW file will provide the frame for drawing the sample of 50,000 beneficiaries in Orange County and the nonenrollee sample for BCBS/AZ, and will be the source of data on basic demographic characteristics for the entire sample. We will also use the Health Insurance Master file to obtain beneficiary names and addresses.

- A list of Senior Preferred and Senior Security enrollees from BCBS/AZ will serve as the frame for drawing the enrollee samples. The enrollee lists will include beneficiaries' social security number, date of birth, sex, and date of enrollment. These lists will be updated quarterly to indicate all beneficiaries currently enrolled in the demonstration (including new enrollees since the last report), all beneficiaries who have disenrolled, and their dates of disenrollment.[4]

- The MADRS file will provide data on the use and cost of services for sample members during the two year pre-demonstration period

- To supplement the MADRS file, data obtained from the carriers will provide detailed Part B data on the use and cost of services for sample members during the two year predemonstration period.[5]

- Claims data from the Common Working Pile will be used for the analysis of provider choice during the demonstration.

- Reports submitted by BCBS/AZ to HCPA contain data on the number of beneficiaries enrolled.

- Structured discussions will be conducted on a subset of the beneficiary sample to obtain information from enrollees and nonenrollees (for BCBS/Az) and users of demonstration and non-demonstration providers (for CAPP CARE). These discussions will explore beneficiaries' awareness and knowledge of the PPO, sources of information about the PPO, reasons for joining or not joining (BCBS/AZ only), and factors which influence the choice of provider.

Each of these data sources has been described in detail in Chapter IL

There have been numerous delays in receiving Part B claims data from the carrier for CAPP CARE. We did not receive claims data from the carrier until October 31, 1991 because the carrier took longer than anticipated to produce the data, and the data were sent to us by Third Class mail. Upon recent review of the data, we have learned that a key variable (the rendering physician variable) is missing from the data. Without the rendering physician variable we will be unable to uniquely identify physicians who belong to group practices.

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[4] In October, 1990 we received from BCBS/AZ monthly data on beneficiary enrollment in Senior Preferred and Senior Security but no data on disenrollment.

[5] The MADRS file contains annual Part B data (total reimbursements), while data obtained from the carriers will have claims level Part B data which indicates procedure codes.

Due to these problems in obtaining carrier data, we anticipate that at the earliest the Draft Interim Report on Beneficiary Choice, Biased Selection, and Use and Cost of Services will be complete in May 1992. This is six months after the revised due date (November 1991) indicated in the Revised Schedule of Deliverables in the Contact Modification.

F. MEASURING THE EXTENT OF BIASED SELECTION IN PPO ENROLLMENT

Data obtained from the HISKEW file, the MADRS file, and the carriers will be used to investigate whether PPO enrollees are significantly different from nonenrollees with respect to characteristics and prior use and cost of services that are related to their propensity to use health services. For BCBS/AZ, we will construct a table comparing Senior Preferred enrollees, Senior Security enrollees, and nonenrollees along the following dimensions: age, sex, race, original reason for entitlement (age, disability, ESRD), Medicaid eligibility, and service use and cost in the pre-demonstration period.' The measures of prior use and cost to be examined include the following:

- Average Medicare reimbursement (total, Part A, and Part B)
- Proportion who met the Part B deductible
- Proportion with zero reimbursement and proportion with very high reimbursement
- Hospital admissions per 1,000 beneficiaries
- Hospital days per 1,000 beneficiaries

For each of the attributes examined, t-tests will be conducted to determine whether the difference between the treatment group (Senior Preferred enrollees) and either of the comparison groups (Senior Security enrollees or nonenrollees) is statistically significant. These measures of use and cost will be analyzed for the two baseline years combined and for the two baseline years separately. The

[6]We will not have income data for any of these beneficiary groups and we will not have data on Medigap coverage for the nonenrollee group because the HISKEW file does not include measures of economic status (such as income) or Medigap coverage. The only'way to obtain data on income and Medigap coverage would be to conduct a survey; we currently do not plan to conduct a survey.

latter will provide information on trends in use and cost for enrollees and **nonenrollees** prior to the demonstration. Table Shells IV.2 and IV.3 illustrate how these descriptive statistics will be reported for **BCBS/AZ.**

A comparable analysis will be conducted for CAPP CARE, except that the groups to be compared will be **defined** on the basis of their choice of provider during the demonstration rather than on the basis of an enrollment choice. Thus, we will compare the characteristics and prior use of beneficiaries who obtain most (or all) of their care from demonstration CAPP CARE providers, those who obtain most (or all) of their care from non-demonstration CAPP CARE providers, those who obtain most (or all) of their care from non-CAPP **CARE** providers, and those who obtain care **from** a combination of these. Table Shell IV.4 illustrates how the descriptive statistics will be reported for the CAPP CARE

As discussed in Chapter II, the biased selection analysis will exclude beneficiaries who were enrolled in a Medicare HMO during the baseline period, since claims data are not available for such individuals. The exclusion of prior HMO enrollees will be accomplished by using the **HISKEW** file to identify all beneficiaries who have been enrolled in a Medicare HMO. The **HISKEW** file indicates whether a beneficiary has been previously enrolled in a Medicare HMO, but does not indicate when the beneficiary was enrolled. We will use the **HIPO file** to determine when the beneficiaries were enrolled, when then they disenrolled, and whether they switched directly from an HMO to Senior Preferred. The issue of switching **from HMOs** to **PPOs** is potentially important, the elderly may prefer the open network concept of a PPO to the closed network of an HMO.

G. ENROLLEES' CHOICE OF PPO VERSUS NON-PPO PROVIDERS

The analysis of beneficiary choice will examine the decision of enrollees to use demonstration PPO versus non-demonstration providers once they are enrolled. To obtain information on beneficiaries' choice of demonstration PPO versus nondemonstration providers in the period following enrollment, a number of different issues will be examined. We will begin by **examining** the

TABLE SHELL IV.2

PRE-DEMONSTRATION COMPARISON OF CHARACTERISTICS
OF ENROILEES AND NONENROLLEES
BCBS/AZ

Beneficiary Characteristics	Senior Preferred Enrollees	Senior Security Enrollees	Nonenrollees	t-test
So&demographic Characteristics				
Age (%)				
67 - 69				
70 - 74				
75 • 84				
over 85				
(mean)				
Sex				
Male (%)				
Race (%)				
Black				
Hispanic				
Other				
Original Reason for Entitlement (%)				
Age				
Disability				
ESRD				
Medicaid Eligibility				
Eligible (%)				
Prior Use and Cost				
Average Medicare Reimbursement ($)				
Total				
Part A				
Part B				
Met Part B Deductible (%)				
Reimbursement Extremes (%)				
Zero Reimbursement				
Very High Reimbursement				
Hospitalized (%)				
Hospital Admissions/1,000				
Hospital Days/1,000				
SNF (%)				

TABLE SHELL IV.3

PRE-DEMONSTRATION TRENDS IN ENROLLEE AND NONENROLLEE USE AND COSTS

BCBS/AZ

Measure of Prior Use and Cost	1988 Senior Preferred/ Senior Security ratio	1988 Senior Preferred/ Nonenrollee ratio	1989 Senior Preferred/ Senior Security ratio	1989 Senior Preferred/ Nonenrollee ratio	t-test
Average Medicare Reimbursement ($)					
Total					
Part A					
Part B					
Met Part B Deductible (%)					
Reimbursement Extremes (%)					
Zero Reimbursement					
Very High Reimbursement					
Hospitalized (%)					
Hospital Admissions/1,000					
Hospital Days/1,000					
SNF (%)					

TABLE SHELL IV.4

PRE-DEMONSTRATION COMPARISON OF CHARACTERISTICS
OF PPO USERS AND NON-USERS

CAPP CARE AREA BENEFICIARIES

Beneficiary Characteristics	Use CAPP CARE Demonstration Providers Only	Use CAPP CARE Non-Demonstration Providers only	Use Non-CAPP CARE Providers Only	Use A Combination of These
Sociodemographic Characteristics				
Age (%)				
67 - 69				
70 - 74				
75 - 84				
over 85				
(mean)				
Sex				
Male (%)				
Race (%)				
Black				
Hispanic				
Other				
Original Reasons for Entitlement (%)				
Age				
Disability				
ESRD				
Medicaid Eligibility				
Eligible (%)				
Prior Use and Cost				
Average Medicare Reimbursement ($)				
Total				
Part A				
Part B				
Met Part B Deductiile (%)				
Reimbursement Extremes (%)				
Zero Reimbursement				
Very High Reimbursement				
Hospitalized (%)				
Hospital Admissions/l,000				
Hospital Days/l,000				
SNF (%)				

percent of enrollees who file a Part B claim during the follow-up period, and the percent who file claims from demonstration PPO providers only, from non-demonstration providers only, and from both. We will also examine the percent of all claims and all reimbursements for beneficiaries that are attributable to demonstration and to nondemonstration providers. In addition, we will examine whether there are any differences in the percent of claims and reimbursements attributable to demonstration PPO and non-demonstration providers when claims are classified by physician specialty, major type of service, selected procedures, and place of service. This analysis will be summarized in a format similar to that shown in Table Shell IV.5.

We will also compare the characteristics and costs incurred by enrollees who (1) use only demonstration PPO providers; (2) use only non-demonstration providers; and (3) use both. These three categories of enrollees will be compared on the basis of age, sex, race, original reasons for entitlement, Medicaid status, prior use and cost of services, and Part B costs during the follow-up period. This analysis will provide a profile of the types of beneficiaries who tend to use demonstration PPO providers once they are enrolled, which will be useful in assessing the future cost containment potential of Medicare PPOs. These findings will be summarized as indicated in Table Shell IV.6.

H. ANALYSIS OF BENEFICIARY PARTICIPATION

The analysis of beneficiary participation will focus on patterns of participation over time and changes in the characteristics of enrollees and disenrollees as area Medicare beneficiaries become more familiar with the PPO concept For BCBS/AZ we will focus on continued enrollment and disenrollment patterns in subsequent years of the demonstration. While disenrollment rates from Senior Preferred are important, the timing of disenrollment is equally important. For example, if considerable disenrollment occurred shortly after enrollment, it seems likely that enrollees are not making informed decisions to enroll Conversely, if disenrollment occurred after the enrollee has experienced some use of services, the disenrollment decision is more likely to be as a result of the

TABLE SHELL IV.5

ENROLLEE CHOICE OF PPO VERSUS NON-PPO PROVIDERS
BCBS/AZ

Source
Claims Information
Enrollees filing Part B claim during follow-up period (percent)
From PPO providers only
From non-PPO providers only
From both PPO and non-PPO providers
Total
Claims and reimbursements
Total
Billed by PPO providers
Billed by non-PPO providers
General Practitioners and Internists
Billed by PPO providers
Billed by non-PPO providers
Physician Specialty B
Billed by PPO providers
Billed by non-PPO providers
Physician Specialty C
Billed by PPO providers
Billed by non-PPO providers
Service A
Billed by PPO providers
Billed by non-PPO providers
Service B
Billed by PPO providers
Billed by non-PPO providers
Services performed in an outpatient setting
Billed by PPO providers
Billed by non-PPO providers
Services performed in an inpatient setting
Billed by PPO providers
Billed by non-PPO providers

TABLE SHELL IV.6

ENROLLEE CHARACTERISTICS AND COSTS BY USAGE OF PPO PROVIDERS
BCBS/AZ

Beneficiary Characteris tics	Only PPO Providers	Only Non-PPO Providers	Use Both
Sociodemographic Characteristics			
Age (percent)			
67 - 69			
70 - 74			
75 - 84			
over 85			
(mean)			
Sex			
Male (percent)			
Race (percent)			
Black			
Hispanic			
Other			
Original Reasons for Entitlement (percent)			
Age			
Disability			
ESRD			
Medicaid Eligibility			
Eligiile (percent)			
Prior Use and Cost			
Average Medicare Reimbursement (dollars)			
Total			
Part A			
Part B			
Met Part B Deductible (percent)			
Reimbursement Extremes (percent)			
Zero Reimbursement			
Very High Reimbursement			
Hospitalized (percent)			
Hospital Days per 1,000			
Hospital Admissions per 1,000			
Part B Costs During Demonstration			

PPO operations. To explore this issue further, we will describe the characteristics of beneficiaries who disenroll from Senior Preferred in 1989, 1990, and 1991. The beneficiary characteristics that will be examined include age, sex, race, and Medicaid eligibility, and will be obtained from the HISKEW file. The results of this analysis will be presented as illustrated in Table Shell IV.7.

To examine participation in CAPP CARE and to further examine the behavior of beneficiaries who voluntarily enrolled in Senior Preferred, we will develop a measure of the extent of beneficiary participation in the PPOs related to the proportion of services used within the demonstration PPO network. We will examine separately persons who receive less than 25 percent of their care (in terms of service units) within the PPO network and those who receive greater than 75 percent of their care within the network, to identify the factors that are associated with high levels of beneficiary participation in the PPO network This analysis, conducted for each year of the demonstration, will also provide information on changing patterns of use of the PPO network over time by continuing enrollees and will allow comparisons of these use patterns between first year enrollees and second year enrollees. (Table Shell IV.8.)

TABLE SHELL IV.7

DISENROLLMENT FROM **BCBS/AZ** BY BENEFICIARY **CHARACTERISTICS**

	1989	1990	1991
Total Enrollment			
Total **Disenrollment**			
Disenrollment by **Beneficiary Characteristics**			
Age (%)			
67 - 69			
70 - 74			
75 - 84			
85+			
Mean age			
Sex **(%** male)			
Race **(%)**			
Black			
Hispanic			
Other			
Original reason for entitlement **(%)**			
Age			
Disability			
ESRD			

TABLE SHELL IV.8

BENEFICIARY USE OF PPO SERVICES BY PERCENT OF CARE PROVIDED BY PPO PROVIDER

Enrollee Characteristics	BCBS of Arizona			CAPP CARE			Family Health Plan		
	Less than 25%	25 - 75%	Over 75%	Less than 25%	25 - 75%	Over 75%	Less than 25%	25 -75%	Over 75%
All Enrollees or Users									
Age (%)									
67 - 69									
70 - 74									
75 - 84									
854									
Mean age									
Sex (% male}									
Race (%)									
Black									
Hispanic									
Other									
Original reason for entitlement (%)									
Age									
Disability									
ESRD									

V. PLAN FOR THE ANALYSIS OF IMPACTS ON THE USE AND COST OF SERVICES

A. INTRODUCTION

A major objective of these demonstrations is to determine whether preferred provider organizations can provide lower cost health care services to Medicare beneficiaries with outcomes comparable to those experienced in the fee-for-service sector, and how any cost savings are achieved In this chapter, the impacts of the PPO intervention on the use and cost of services will be examined by comparing the service use and cost observed in the demonstration sites in the period following demonstration startup to an estimate of what would have occurred in the absence of the demonstration. The approach to the analysis we have developed takes into account that CAPP CARE is a nonenrollment model PPO and that Senior Preferred (BCBS/AZ) is an enrollment model PPO.

This analysis will be conducted in two stages. An interim use and cost analysis will use individual-level data to provide the government with early results on the use and cost of services by Medicare beneficiaries enrolled in PPOs. The final analysis of use and cost impacts will extend the interim analysis by examining claims data for a longer period of time after the start of the demonstrations.

B. CONCEPTUAL FRAMEWORK

The PPOs participating in the demonstration vary along a number of dimensions, including model type, beneficiary incentives, and utilization management techniques. Despite these differences among the participating PPOs, they may each be broadly characterized as attempting to constrain Medicare costs by (1) attracting and maintaining a relatively large network of physicians, (2) modifying the behavior of network physicians through various utilization review (UR) techniques designed to reduce inappropriate service use, and (3) influencing the provider choice of beneficiaries in order to

"channel" patients to network physicians. The PPOs participating in the demonstration vary considerably in the means by which they attempt to achieve these objectives.

The UR techniques adopted by the demonstration PPOs are intended to he more effective at reducing inappropriate service use and constraining costs than the techniques employed under the Medicare program currently. UR activities under the Medicare program are currently performed by the peer review organizations (PROs), the intermediaries, and the carriers, and the focus is primarily on reviewing the appropriateness of service use retrospectively--i.e., after the care has been provided (GAO, 1989). In cases where inappropriate care is judged to have been provided, payment to the provider(s) is denied. Although the primary emphasis is on retrospective reviews, the PROs also conduct prospective reviews for ten specified surgical procedures.

Unlike the approach to UR adopted by Medicare, UR programs in the private sector rely primarily on prospective reviews. The prospective UR techniques commonly employed in the private sector include prior authorization for elective hospital admissions, prior authorization for surgeries, and second-opinion programs for surgeries. A commonly cited advantage of prospective UR techniques is that they provide the reviewer an opportunity to influence the course of treatment prior to the provision of care. The General Accounting Office has recommended that Medicare strengthen its UR program through greater reliance on prospective reviews (GAO, 1989).

BCBS/AZ conducts intensive physician profiling and traditional utilization review for its non-Medicare PPO, but not for Senior Preferred (its Medigap PPO). Since Senior Preferred network physicians are recruited from the BCBS/AZ non-Medicare PPO network, BCBS/AZ believes this gives them a cost-effective network for Senior Preferred. CAPP CARE attempts to contain costs through intensive, automated utilization review.

The PPOs can potentially achieve cost savings under the demonstration through two mechanisms: (1) modifying the behavior of network physicians such that they treat Medicare patients in a more wst effective manner, and (2) influencing Medicare beneficiaries' choice of physician such that

network physicians achieve a greater share of the Medicare patient load. The first of these mechanisms depends on the effectiveness of the UR techniques discussed above, while the second depends on the effectiveness of the incentives offered beneficiaries to choose PPO physicians. With respect to the effectiveness of the UR mechanisms, it is important to recognize that cost savings will be achieved for the existing (i.e., pre-demonstration) patient load of network physicians only if the demonstration causes these physicians to adopt a more cost effective style of practice. If network physicians do not alter their practice style, cost savings can be achieved under the demonstration only if (1) Medicare patients shift from non-PPO to PPO physicians, and (2) PPO physicians treat Medicare patients in a more cost effective manner than other area physicians. The latter is likely to be the case since physicians with a preference or tolerance for practicing a conservative style of medicine are expected to be more likely than other physicians to join and remain affiliated with a PPO.

C. RESEARCH QUESTIONS

The use and cost analysis for BCBS/AZ will estimate PPO impacts using individual-level data on a sample of enrollees and nonenrollees. For BCBS/AZ the research questions to be addressed in the analysis of use and cost impacts include:

- What is the impact of the PPO on enrollees total, Part A, and Part B reimbursements?
- What is the impact of the PPO on the hospital admission rate and the total days of inpatient care for enrollees?
- What is the impact of the PPO on enrollees' use of specific diagnostic and therapeutic Part B procedures?
- Does the PPO appear to be shifting care from an inpatient to an outpatient setting?
- Does the PPO appear to be substituting low cost" procedures for "high cost" procedures?

For the nonenrollment model PPO (CAPP CARE), the research questions to be addressed include:

- What is the effect of the demonstration on overall rates of service use and cost among Medicare beneficiaries in the demonstration site?
- Do beneficiaries who receive care from demonstration PPO providers receive different levels and types of treatment than they would have received from non-demonstration providers?
- To what extent do beneficiaries use demonstration PPO providers?
- Do the effects of the demonstration PPO on service use and cost change over time?
- Does the demonstration alter the practice patterns of demonstration PPO' physicians?

D. SAMPLES AND DATA SOURCES

The use and cost analysis will be conducted in two stages: an interim analysis (to be reported in the Interim Report on Beneficiary Choice, Biased Selection, and Use and Cost of Services) and a final analysis (to be reported in the Final Report on Beneficiary Choice, Biased Selection, and Use and Cost of Services). These analyses will use the same research methodologies. They will primarily differ in the length follow-up periods for both BCBS/AZ and CAPP CARE.

To conduct the use and cost analysis, we will use five major data sources and claims samples of individual beneficiaries at each demonstration site. Different sampling methods will be required for evaluating BCBS/AZ (the enrollment model PPO) and CAPP CARE (the non-enrollment model PPO).

1. Beneficiary Samples

a. Sample Selection for Evaluation of BCBS/AZ

The enrollee sample for BCBS/AZ will be selected from the population of beneficiaries who enroll during the sample intake period specified in Chapter IL For the interim and final analyses the

enrollee sample will include all beneficiaries who enrolled in Senior Preferred from January 1, 1990 through April 1, 1990. Two comparison samples will be selected. The first will include an equal-sized sample of Senior Preferred enrollees as of April 1, 1990 and the second will include an equal-sized sample of beneficiaries in Maricopa and Pima counties who are covered by Medicare and not enrolled in Senior Preferred, or an HMO during the intake period.

b. Sample Selection for Evaluation of CAPP CARE

For the analysis of the non-enrollment model PPO (CAPP CARE), all users of demonstration CAPP CARE physicians will be identified using Part B claims data and a list of all beneficiaries who have seen a CAPP CARE demonstration physician at least once. Users of demonstration CAPP CARE physicians will be those beneficiaries with most (for example, at least 75 percent) of their Part B reimbursements from CAPP CARE demonstration physicians. Equal-sized samples of users of non-demonstration CAPP CARE physicians, users of non-CAPP CARE physicians, and users of a combination of these will also be drawn. We will also draw equal-sized samples of beneficiaries in the external comparison site (San Diego County). For the interim analysis the post-implementation period will begin at the demonstration start date (April 1, 1990) and end one year later (March 31, 1991). For the final analysis the post-implementation period will begin on April 1, 1990 and end two years later (March 31, 1992). The same followup periods will be used for BCBS/AZ.

2. Data Sources

Five data sources will be used to analyze the use and cost impacts of PPOs on Medicare beneficiaries:

- **Quarterly reports** submitted by the PPOs to HCFA will contain data on the number of beneficiaries enrolled and on aggregate measures of Part A and Part B service use and cost for enrollees. These data will indicate total Part B reimbursements, number of primary care physician visits, number of referrals to

specialists, and number of surgeries, and will be used to compute rates of service use and cost per beneficiary for each PPO.[1]

- HCFA's HISKEW file will provide the frame for drawing the CAPP CARE sample and the nonenrollee sample for BCBS/AZ, and will be the source of data on basic demographic characteristics for the entire sample. The file contains identification, demographic, and eligibility data on every individual covered by Medicare.
- Enrollment data from BCBS/AZ will be used to draw the samples of Senior Preferred and Senior Security enrollees.
- The MADRS file will be the source of data on sample members' use and cost of services in the baseline period. It contains bill and claims data for the full range of Part A and Part B services for the entire Medicare population,
- Claims data on Part B service use and cost by sample members in the baseline period will be obtained directly from the carriers. Carrier data will provide more detailed information on Part B use than is available from MADRS.
- The common working file will be the source of data on sample members' use and cost of services in the follow-up period. It contains claims level Part A and Part B data for the entire Medicare population. (The MADRS file does not contain claims level Part B data.)

E. INTERIM AND FINAL ANALYSES OF BCBS/AZ

1. Beneficiary - Based Analysis

Estimating the impact of the PPO intervention on service use and cost by enrollees requires comparing enrollees' experience in the follow-up period to an estimate of what would have been observed for those individuals in the absence of the demonstration. As described in Chapter II, the latter will be estimated using two comparison groups: (1) Senior Security enrollees and (2) beneficiaries in Maricopa and Pima counties who are not enrolled in Senior Preferred, or a Medicare HMO. Based on the demographic characteristics and prior service use of the two comparison groups, we will select the comparison group that is as similar as possible to Senior Preferred enrollees except that they have not enrolled in Senior Preferred. For the interim analysis, we will estimate the impact of the PPO intervention on service use and cost during a one year follow-up period. The final

[1]Only CAPP CARE will be submitting these reports.

analysis will extend the interim analysis by estimating the impact of the PPO intervention over a longer, two year follow-up period.

Before estimating PPO impacts on service use and cost for enrollees, the Ievel and pre/post demonstration change in various measures of service use and cost for Senior Preferred enrollees, Senior Security enrollees, and nonenrollees will be compared and presented in a descriptive table as shown in Table Shells V.l and V.2. The specific measures of use and cost include: Medicare reimbursement per beneficiary (total, Part A, and Part B), reimbursement for physician services per beneficiary, hospital admission rates, and hospital days per 1,000 beneficiaries.

A multivariate regression model that controls for any pre-existing differences between enrollees and the comparison group that is most similar to Senior Preferred enrollees (as determined in the beneficiary choice and biased selection analysis) will be used to estimate PPO impacts on service use and cost for enrollees. A model of the following general form will be estimated for the enrollee and comparison sample:

(5.2) $y = X' b + Ec + u$

where y is a measure of service use or cost in the follow-up period, X is a vector of explanatory variables which include demographic characteristics and prior use, u is a random disturbance term, E is a binary variable equal to 1 for Senior Preferred enrollees and 0 otherwise, and b and c are parameters to be estimated. If the explanatory variables in X fully control for differences between enrollees and nonenrollees in the propensity to use health care services, then the estimate of the parameter c will provide an unbiased estimate of the PPO impact on enrollees' service use and cost.

TABLE SHELL V. 1

PRE/POST COMPARISON OF SERVICE USE AND COST
BY SENIOR PREFERRED ENROLLEES, SENIOR
SECURITY ENROLLEES, AND NONENROLLEES
BCBS/AZ

Use/Cost Measure	Baseline Period					Followup Period				
	Senior Preferred Enrollees (1)	Senior Security Enrollees (2)	Nonenrollees (3)	Ratio (1)/(2)	Ratio (W (3)	Senior Preferred Enrollees (4)	Senior Security Enrollees (5)	Nonenrollees (6)	Ratio (4)/(5)	Ratio (4)/(6)
Average Medicare Reimbursement (S)										
Total										
Part A										
Part B										
Met Part B Daiuctibk (%)										
Reimbursement Extremes (%)										
Zero Reimbursement										
Very High Reimbursement										
Hospitalized (%)										
Hospital Admissions/1,000										
Hospital Days/1,000										

TABLE SHELL V.2

TRENDS IN USE AND COSTS FOR SENIOR PREFERRED ENROLLEES, SENIOR SECURITY ENROLLEES, AND NONENROLLEES

Measure of Use and Cost	Senior Preferred Enrollee/ Senior Security Enrollee Ratio			Senior Preferred Enrollee/Nonenrollee Ratio		
	Baseline Year1	Baseline Year 2	Follow-up Period Year 1 Year 2	Baseline Year 1	Baseline Year2	Follow-up Period Year1 Year2
Average Medicare Reimbursement ($)						
Total						
Part A						
Part B						
Met Part B Deductible (%)						
Reimbursement Extremes (%)						
Zero Reimbursement						
Very High Reimbursement						
Hospitalized (%)						
Hospital Admissions/1,000						
Hospital Days/1,000						

This model will be estimated with a number of different measures of service use and cost. First, we will estimate PPO impacts on total reimbursements, and Part A and Part B reimbursements, to provide an overall assessment of whether PPOs reduce costs and, if so, whether this is due primarily to reductions in Part A costs or Part B costs. Next we will examine use and costs for specific Part B services. For example, to determine the source of any reductions in total Part B costs, we will estimate impacts on specific categories of services, such as specialist care and surgery. In particular, we will examine specific Part B procedures which account for a significant portion of the growth in Part B costs. Mitchell et al. (1989) identify several Part B surgical procedures, such as wlonoswpy, lens procedures, sigmoidoswpy, and cardiac catheterization, which contributed disproportionately to the increase in Part B expenditures from 1983 to 1986.[2] Examining specific Part B procedures will enable us to determine how cost savings are achieved. For example, we can investigate whether PPO providers order fewer expensive diagnostic tests or surgical procedures. The variables to be included in these regression equations are presented in Table Shells V.3 and V.4.

In many instances the dependent variable (the measure of service use or cost in the follow-up period) in the regression analysis is not a continuous, normally distributed variable, and the ordinary least squares regression model will not yield the best coefficient estimates. Some measures of service use are binary (e.g., whether or not the beneficiary was hospitalized), and the probit model is superior to ordinary least squares regression, in this case. Other measures of service use and wst, such as medical reimbursements, are highly skewed with some individuals incurring no costs during a particular period, while others exhibit very high costs. When this is the case, two-part and four-part econometric models produce more precise coefficient estimates than ordinary least squares estimates?

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[2]See Mitchell, J.B., Wedig, and Cromwell, "The Medicare Physician Fee Freeze: What Really Happened?", *Health Affairs*, Volume 8, No.1, Spring 1989.

[3]See Manning, Williard G., et al., "Health Insurance and the Demand for Medical Care: Evidence from a Randomized Experiment," The American Economic Review, Volume 77, No. 3, June 1987.

TABLE SHELL V.3

REGRESSIONS VARIABLES: ESTIMATION OF PPO IMPACTS ON SERVICE USE AND COST FOR ENROLLEES

REIMBURSEMENTS AND HOSPITALIZATION

Variable
Dependent variables
Average Medicare Reimbursement ($) during demonstration
Total
Part A
Part B
Hospital admission/1,000 beneficiaries during demonstration
Hospital **days/1,000** beneficiaries during demonstration
Hospitalization
(= 1 if hospitalized)
(=0 otherwise)
Part B reimbursement for colonoscopy
Part B reimbursement for lens procedures
Part B reimbursement for sigmoidoscopy
Part **B** reimbursement for cardiac **catherization**
Other Part B reimbursement
Independent Variables
(pre-demonstration period)
Age in years minus 65
Sex
(=1 if male)
(=0 if female)
R a c e
(=1 if nonwhite)
(=0 **otherwise)**
Hospital days
Part A reimbursement
Part B reimbursement
Total Medicare reimbursement
SNF
(=1 if positive SNF reimbursement)
(-0 otherwise)
HHA
(=1 if positive HHA reimbursement)
(=0 otherwise)
Enrollment
(= 1 if Senior Preferred **enrollee)**

TABLE SHELL V.4

COMPARISON OF PROCEDURES PERFORMED BY
DEMONSTRATION PPO PHYSICIANS
ANTI NON-DEMONSTRATION PHYSICIANS

Specialty and Procedure	Number of Procedures Performed per Beneficiary Treated (or Encountered)			
	Before Demonstration Start Date		After Demonstration Start Date	
	Demonstration Physicians	Non-Demonstration Physicians	Demonstration Physicians	Non-Demonstration Physicians
General Practitioners and Family Practioners				
Procedure 1				
Procedure 2				
Procedure 3				
Procedure 4				
Internists				
Procedure 1				
Procedure 2				
Procedure 3				
Procedure 4				
General Surgeons				
Cardiologists				
Gastroenterologists				
Ophthamologists				
(Etc.)				

In the two-part model, one equation estimates the probability of positive expenses, and the second equation estimates the level of (log) positive expenses for the observations with positive expenditures. In the four-part model, the sample is split into three groups: beneficiaries with no expenditures, beneficiaries who use only Part B services, and beneficiaries who use Part A services. Four equations are estimated. The first equation estimates the probability of positive expenses, the second equation estimates the probability of Part A expenses conditional on having positive medical expenses, the third equation estimates the (log) level of positive expenses for beneficiaries with only Part B expenses, and the fourth equation estimates the level of positive expenses for persons who have positive Part A expenditures.

2. Physician - Based Analysis

In addition to comparing the use and cost of services of Senior Preferred enrollees to Senior Security enrollees and beneficiaries not enrolled in Senior Preferred or an HMO, we also plan to compare the practice patterns of physicians in the Senior Preferred network with non-Senior Preferred physicians practicing in Maricopa and Pima counties. This analysis differs from that described previously in that the physician, rather than the beneficiary, is the primary unit of analysis. Detailed Part B data will be collected for all beneficiaries residing in Maricopa and Pima counties. The analysis file will be created as follows:

- Obtain a list of Senior Preferred network physicians from the PPO, and obtain a list of the remaining physicians in Maricopa and Pima counties either from the carrier (Aetna) or from the AMA Physician Masterfile.
- Identify procedures that are performed by more than one physician (e.g., an assistant in surgery). To avoid double-counting the procedure, assign the procedure to only one physician
- Match Mariwpa and Pima county beneficiary claims to physicians in the sample using the physician identification number

The physician-based analysis can be performed only if detailed Part B data are available with the following characteristics:

- Unique identification of all or virtually all of the physicians practicing in Maricopa and Pima counties
- Information on the procedure performed on each claim.

We plan to obtain Part B claims data for Arizona from 1988 through 1990 from Health Economics Research, Inc. (HER). HER has obtained 1988 and 1989 claims data from Aetna (and 12 other carriers) and has processed the data into a "standardized" format. HER has performed the following data edits and merges for the standardized files:

- Duplicate and reprocessed claims have been edited
- Carrier-specific service categories and service locations have been edited for consistency across carriers
- Local procedure codes have been converted to the HCFA common procedure coding system (HCPCS) codes
- Data on physician specialty and participation status (if not included on the claims) were obtained from another source and merged into the claims data
- Beneficiary eligibility and demographic information has been merged onto each claim.

A representative from Aetna has told us that we should be able to uniquely identify physicians. If we are able to do so, we will initially conduct simple comparisons between Senior Preferred physicians and non-Senior Preferred physicians. As indicated in Table Shell V.4, for the physicians specialties for which there are large numbers of physicians in each category, we will present the number of specific procedures performed per beneficiary treated (or per encounter) one year prior to the demonstration date and during the first year of the demonstration. The procedures that may be used to make the physician comparisons are listed in Table Shell V.5. We are most interested in the procedures that were found to have either the greatest or moderate variation in rates of use

TABLE V.5

PROCEDURES WHICH HAVE EXHIBITED HIGH, MODERATE OR LEAST VARIATION IN RATES OF USE ACROSS SITES

Procedure	Mean Rate of Use Per 10,000 Beneficiaries
Greatest Variation Among Sites	
Destruction of benign skin lesion	360
Arthrocentesis	390
Skin biopsy	95
Humeral fracture repair	13
Coronary-artery bypass surgery	13
Moderate **Variation Among Sites**	
Carotid endarterectomy	14
Excision of malignant skin lesion	150
Coronary angiography	33
Excision of benign breast lesion	13
Total hip replacement	15
Arterial grafts of lower extremities	13
Colles' fracture repair	26
Least **Variation Among Sites**	
Bronchoscopy	50
Mastectomy	17
Diagnostic upper gastrointestinal endoscopy	120
Colectomy	33
Cholecystectomy	41
Prostatectomy	82
Lens extraction	140
Inguinal hernia repair	45

SOURCE: Table 2, Chassin, et al., "Variations in the Use of Medical and Surgical Services by the Medicare Population", *The* New *England Journal of Medicine,* Volume 314, No. 5, January 30, 1986. Only procedures with a mean rate of use of at least 10 per 10,000 beneficiaries are included in the above table.

across sites in the study by Chassin, et al. (1986).[4] This comparison will indicate the extent to which Senior Preferred physicians practiced a more cost effective style of medicine prior to the demonstration, and whether they changed their behavior relative to non-demonstration physicians during the first year of the demonstration.

F. INTERIM AND FINAL ANALYSES OF CAPP CARE

1. Beneficiary-Based Analysis

The analysis of use and cost impacts of CAPP CARE will involve comparisons between beneficiaries in Orange County who primarily or exclusively use demonstration CAPP CARE providers and (1) beneficiaries in Orange County who primarily or exclusively use non demonstration CAPP CARE providers and (2) beneficiaries in Orange County who primarily or exclusively use non-CAPP CARE providers. For the interim analysis the analysis of cost impacts will be conducted for a one year follow-up period. The final use and cost analysis will extend the interim analysis by using a longer, two year follow-up period.

The comparison of pre- and post-demonstration startup change in rates of service use and cost is summarized in Table Shell V.l. Use rates--such as average Part A and Part B reimbursements, hospital admission rates, and hospital days per 1,000--will be computed for the samples of users of demonstration network physicians, users of non-demonstration CAPP CARE physicians, and users of non-CAPP CARE physicians, so that we may examine use rates for the total Medicare population in each site and address questions regarding both the probability of use and the level of use. We will also compare the pre/post experience of beneficiaries in the demonstration site who have any contact with CAPP CARE demonstration physicians with the corresponding experience of beneficiaries in

[4] See Chassin, et al., "Variations in the Use of Medical and Surgical Services by the Medicare Population," The New *England Journal of Medicine,* Volume 314, No., 5, January 30, 1986. The procedures selected for Table V.6 are the procedures from Table 2 of Chassin, et al. (1986) for which there was a mean rate of use of at least 10 per 10,000 beneficiaries.

the two comparison sites. This comparison will be presented in descriptive tables comparabb to Table Shells V.1 and V.2.

For the regression analysis summarized in Table Shell V.3, which estimates the impact of the PPOs on service use and cost for enrollees, "enrollees" will be defined as beneficiaries at the demonstration site who use demonstration PPO providers exclusively or at least 75 percent of the time, and the comparison group will be defined as beneficiaries who use nondemonstration providers exclusively or at least 75 percent of the time. These groups will be compared to determine whether there are any systematic differences between them in service use and costs following demonstration startup, controlling for differences in demographic characteristics and prior use and cost of services. We will also conduct a multivariate analysis with beneficiaries in the two external comparison sites and beneficiaries in the demonstration site who have any contact with CAPP CARE demonstration physicians.

2. Physician-Based Analysis

The physician-based analysis for CAPP CARE will be similar to the physician-based analysis for Senior Preferred, except that the practice patterns of physicians in the CAPP CARE PPO demonstration network will be compared to the practice patterns of (1) non-demonstration CAPP CARE physicians and (2) non-CAPP CARE physicians practicing in Orange County.[5] Detailed Part B data will be obtained from Transamerica Occidental, the carrier. A representative from Transamerica has told us since April 1, 1989, use of physicians' California state license numbers, which uniquely identity physicians, have been mandatory. However, there may be a lag in the time at which these codes were mandated and when the codes were consistently reported. Additionally, on October 1, 1989, Transamerica began denying claims that did not have ICD9 diagnosis codes.

As indicated in Section E of Chapter IV, there have been delays and problems obtaining Part B claims data from the carrier. Thus, we anticipate that at the earliest the Interim Report on

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'Table Shell V.4 for CAPP CARE will indicate this three way comparison.

Beneficiary Choice, Biased Selection, and Use and Cost of Services will be complete in May 1992. This is six months after the revised date indicated in the Revised Schedule of Deliverables of the c&tract modification.

VI. FEASIBILITY ANALYSIS

The ultimate objective of the evaluation of the Medicare Physician Preferred Provider Organization demonstrations is to determine whether the PPO approach to management of medical services provided to Medicare beneficiaries is feasible and desirable. Each of the case studies and site specific analyses will provide evidence on the process, unique features, and impacts of the demonstration. The final phase of the evaluation will integrate the Endings from each of the individual evaluation components to examine the issues of feasibility and desirability of the Medicare PPO approach as a permanent program available to Medicare beneficiaries on an ongoing basis. This chapter describes our approach to this feasibility analysis.

A. DEFINITION OF *FEASIBILITY*

We will define the Medicare PPO demonstrations as having demonstrated that the Medicare PPO approach is feasible on a national, permanent basis based on the following criteria:

1. The program is operationally feasible.
2. The demonstration PPOs are able to attract and retain sufficient numbers of Medicare beneficiaries to achieve a market penetration level similar to that achieved by Medicare HMOs.
3. The savings to the Medicare program due to utilization management activities of the demonstration PPOs are great enough to offset the additional costs associated with administration of the program and any reductions in out-of-pocket costs offered by HCFA to beneficiaries for using the PPO providers.

Although the principal focus of the demonstration program is on the voluntary enrollment PPO model, our definition of feasibility will encompass three alternative models to expansion of the Medicare PPO concept:

1. A national voluntary Medicare PPO program, similar to the Medicare HMO program under the TEFRA regulations, with existing PPOs contracting with HCFA to serve Medicare beneficiaries in a defined geographic area, offering an existing

network of physicians and other providers, and offering incentives to Medicare beneficiaries to enroll in the PPO and to use PPO network providers.

2. A national non-enrollment based Medicare PPO program, with HCFA contracting with existing PPOs and their provider network to provide utilization management services to Medicare beneficiaries who use the provider network. Medicare beneficiaries would be relatively unaware of the activities involved and would be offered no direct incentives to use the PPO network-other than being informed that network physicians accept assignment on all claims.

3. Selection of specific, effective utilization management practices to impose on the Medicare program nationally, perhaps through PROs or through contracts with utilization management organizations, not necessarily involving contracting with any existing PPOs for services under the program.

Our definition of feasibility will be applied to each of these alternatives, in turn, based on the evidence accumulated over the evaluation activities. Table VI.1 summarizes the feasibility issues to be addressed and the analytic components of the evaluation that will be drawn upon to assess feasibility.

B. OPERATIONAL FEASIBILITY

The analysis of operational feasibility of the Medicare PPO concept will focus on a variety of issues. Of principal concern is whether the complex relationships of timing and interaction necessary among the PPO, the carrier, the intermediary, and the PRO in the demonstration market area have operated smoothly. This issue has dominated the design phase of the demonstration and has been responsible, to a great extent, for the relatively slow start-up of the pilot demonstrations. We will want to assess the extent to which these relationships were more successful in some sites rather than others, and attempt to identify the reasons for differences among sites in this type of operational feasibility. If differences can be identified, then we will examine the implications of the findings for the development of a national Medicare PPO program, whether voluntary, nonenrollment, or an extension of selected utilization management techniques to the Medicare program as a whole.

Another critical operational feasibility issue is the extent to which PPOs are able to successfully use the utilization management techniques for the Medicare population that they have developed and

TABLE VI.1

ASSESSMENT OF FEASIBILITY

	Topic		Research Questions		Source
I.	Operational Feasibility	1.	How well do the PPOs, carriers, intermediaries, and PROs interact? Is this operationally feasible in the long run?	1.a. b.	Implementation Analysis Status Reports
		2.	Are HCFA's regulations and reporting requirements perceived by the PPO management as reasonable or as unduly burdensome?	2.a. b.	Implementation Analysis Status Reports
		3.	Does the non-Medicare PPO physician network participate in the Medicare network? Does this change over time? Will physicians participate under a permanent program?	3.a. b. c.	Implementation Analysis Status Reports Provider Participation Analysis
		4.	Are existing PPO utilization management techniques appropriate and effective for use with Medicare beneficiaries? Has the PPO changed its use of these techniques during the demonstration period? Why?	4.a. b. c.	Implementation Analysis Status Reports Analysis of Utilization Impacts
II.	Cost/Benefit Feasibility	1.	Do PPOs result in cost savings to the Medicare program?	1.a. b. c. d. e.	Implementation Analysis Status Reports Analysis of Site Specific Impacts on Use and Cost Analysis of Administrative Costs Analysis of Medicare Program Savings
		2.	What factors appear to account for cost savings observed and can these factors be generalized to a national program?	2.a. b. c. d. e.	Implementation Analysis Status Reports Analysis of Site Specific Impacts on Use and Cost Analysis of Administrative Costs Analysis of Medicare Program Savings
		3.	Are the expected financial benefits to PPOs from participating in Medicare sufficient to induce participating in a national permanent program?	3.a. b. c.	Implementation Analysis Status Reports Analysis of Administrative Costs

used for the non-Medicare population. The HMO industry found that utilization management that was sufficient to achieve some sayings for the under age 65 enrollment was not always appropriate or cost-saying for the Medicare population. As a result, many of the HMOs in the Medicare Competition Demonstration program found it necessary to re-examine their utilization management and utilization control system and to modify it to address the greater and different health care use patterns of the elderly. We will examine the initial approaches to utilization management used in each of the demonstration sites by the PPOs and the changes in those approaches during the demonstration period. We then will integrate the findings on the impact of the PPO demonstrations on use and costs of services in Year 1 and Year 2 with the initial and modified (if necessary) utilization management approaches-and drawing upon the information on perceptions and processes accumulated through the Status Report interviews and the implementation analysis-to attempt to identify operationally successful utilization management techniques.

C. MARKET PENETRATION FEASIBILITY

The feasibility of the Medicare PPO approach with respect to market penetration is a relevant issue only for the voluntary enrollment model, under which HCFA contracts with existing PPOs and these PPOs then market their product to Medicare beneficiaries. The feasibility analysis will focus on the enrollment and disenrollment experiences and market penetration success over the two years of the demonstration. Results of the consumer choice and biased selection analysis, information on marketing strategies and expenditures, and site visit data on competition in each market area with HMOs and fee-for-service providers will be arrayed to identity more and less successful enrollment model PPOs and the key factors that appear to distinguish the degree of market penetration. The information obtained over time from the Status Report site visits and telephone interviews also will provide the PPO management's perspective on the difficulties encountered in marketing to and retaining Medicare beneficiary enrollees and their opinions on the desirability and feasibility of operating in this market in the longer run.

D. COST/BENEFIT FEASIBILITY

The desirability of a national Medicare PPO program, in any form, will be determined by the evidence on the potential of utilization management to achieve savings for the Medicare program. For savings to exist, the total administrative and operational costs of the PPO program must be less than the documented savings resulting from reductions in inappropriate and unnecessary utilization of health services. The site specific analyses of use and cost impacts, and the analyses of administrative costs and impacts on Medicare program costs, will provide extensive evidence on this issue. The feasibility analysis will focus on attempting to determine whether costs and benefits vary by type of PPO arrangements and whether there are specific utilization management techniques that are demonstrated to be cost-effective with the Medicare population. We will also examine differences in costs and benefits by market area and by the competitive structure of the market area, including whether there appear to be any interactive effects of high HMO presence and greater or lesser PPO success financially.

It also will be useful to examine cost/benefit feasibility from the PPO's perspective. Even if the PPO intervention does result in savings to the Medicare program, it is possible that the PPO management may not deem it financially rational to invest extensive resources into participation in the Medicare program, because the complexities are great and financial rewards are low and/or because other strategic opportunities appear to have the potential to be more profitable. Differences among the PPOs in their management's perspectives on the attractiveness of permanent wntracting with HCFA to serve the Medicare program will be considered within the context of the specific PPO, its market area, and its performance during the demonstration.

Results from the analysis of the cost/benefit feasibility of the Medicare PPO program also will be examined to determine whether they provide evidence to support any type of national Medicare PPO program. Even if the voluntary enrollment model PPO is found to be not feasible or desirable from a cost/benefit perspective, there may be persuasive evidence that a nonenrollment, existing PPO

model is feasible or that selected elements of the PPOs' utilization management approach could be adopted for the Medicare program as a whole in order to achieve substantial cost savings to the Medicare program

E. SCHEDULE AND OUTLINE OF FEASIBILITY ANALYSIS REPORT

Prior to beginning this analysis, we will prepare a detailed outline of our approach to the feasibility report in February 1993 and will meet with HCFA staff to review this outline in March 1993. We anticipate preparing a Draft Report on the Feasibility of the Medicare PPO Program during June 1993. The Final Report on the Feasibility of the Medicare PPO Program will be prepared, incorporating suggestions and comments of the HCFA reviewers, and submitted in September 1993. A tentative outline of the draft report includes:

OUTLINE
REPORT ON FEASIBILITY ANALYSIS

I. OBJECTIVES OF THE PPO DEMONSTRATION AND DESCRIPTION OF THE PPOS

II. DEFINITION OF *FEASIBILITY*

A. Operational feasibility

1. PPO perspective
2. HCFA perspective
3. Carrier/intermediary perspective

B. Market penetration feasibility

1. PPO perspective
2 Beneficiary perspective
3. Provider perspective

C Cost/Benefit feasibility

1. PPO perspective
2 HCFA perspective

III. ALTERNATIVE APPROACHES TO USE OF THE PPO APPROACH FOR MEDICARE

A. Overview of Issue

B. Discussion: Is the PPO option one that could or should be implemented nationally as a utilization management system required for all Medicare services? Why? How?

C. Discussion: Is the Medicare PPO an option that should be made available to beneficiaries as one of several alternatives of provider/payment arrangements among which they can voluntarily choose? Why? How?

IV. OPERATIONAL FEASIBILITY

A. Discussion: Is the Medicare PPO concept operationally feasible? Could it be implemented on a broader basis without undue complexity and costs? Are there areas where it is not operationally feasible? Why? Is it operationally feasible as a national, nonvoluntary program covering all Medicare beneficiaries? Is it feasible as an additionai option that beneficiaries participate in on a voluntary basis?

B. Under what conditions is a permanent national Medicare PPO program operationally feasible?

V. MARKET PENETRATION FEASIBILITY

A. Discussion: Will beneficiaries join in sufficient numbers to warrant the additional administrative complexity? Will physicians (and other providers) agree to participate in sufficient numbers to ensure that the voluntary Medicare PPO is a viable option? Does feasibility vary by market area characteristics; does Medicare HMO market penetration increase or diminish feasibility?

B. Under what conditions is a Medicare PPO permanent program feasible from the perspective of reasonable market penetration expectations?

VI. COST/BENEFIT FEASIBILITY

A. Discussion: Do the costs and benefits vary by type of PPO arrangement? Are there specific utilization management techniques that are demonstrated to be cost-effective? Is it feasible to require these effective utilization management techniques in all Medicare PPOs in a permanent program? Are there differences in costs and benefits by market area; are costs/benefits greater or lesser in areas with high HMO market penetration? Do the administrative costs of dealing with individual existing PPOs argue for a national, nonvoluntary program?

B. Under what conditions is a national Medicare PPO program feasible from a cost/benefit perspective?

VII. OTHER FEASIBILITY ISSUES

(e.g., Would a Medicare PPO program be feasible if it explicitly included Part A services, as well as Part B services?)

VIII. RECOMMENDATIONS

VII. OTHER ANALYSES

The evaluation of the Medicare Physician PPO demonstration will include analyses of the following issues:

- The level and sources of administrative costs in each site
- The impact of the demonstrations on Medicare program costs
- Behavior of providers participating in the demonstrations

The results of these analyses will be included both in the Interim and Final use and cost report and in the Feasibility Report. Our approach to each of these analyses is descrii in this chapter.

A. ANALYSIS OF ADMINISTRATIVE COSTS

1. Introduction

From a cost standpoint, the pilot demonstration will be successful if the cost savings from the PPOs' managed care programs are greater than the sum of the administrative costs incurred by HCFA, the PPOs, and the carriers. Administrative costs include the costs of marketing, more extensive claims processing, utilization review, administration, data processing, and quality assurance. In this component of the evaluation, the following types of administrative costs will be examined:

- PPO administrative costs: the additional costs to the PPO to operate the Medicare demonstration. Such categories of wsk may include administration (including interaction with HCFA/evaluator, carriers, PPO physicians, and beneficiaries), marketing, enrollment process, claims processing, utilization review, quality assurance, data processing, and demonstration reporting.
- HCFA administrative costs: the additional costs to HCFA to operate the Medicare demonstration. Such categories of costs may include administration (including interaction with the PPOs and carriers) and marketing (e.g., demonstration announcements to beneficiaries).
- Carrier administrative costs: the additional costs to the carriers, paid by HCFA, to operate the Medicare PPO demonstration. Such categories of costs may include increased interaction with HCFA and increased time for claims processing.

The focus of this component of the evaluation will be primarily upon defining, measuring, and analyzing the real administrative costs incurred by the PPOs. It is critical for HCFA's understanding of the potential of PPOs to result in lower total expenditures for the Medicare program that the administrative costs of PPOs be accurately measured It is, of course, also important to examine the incremental administrative costs incurred by HCFA, directly and via additional carrier costs paid by HCFA Our approach to the evaluation of administrative costs of the PPO demonstrations will encompass all these cost elements.

2. Research Questions

The study of administrative costs will address the following questions:

- What is the approximate average administrative cost to HCFA per beneficiary enrolled in each site?
- How do administrative costs change with the mix of individual enrollees and group enrollees?
- Are there any economies of scale in administrative costs, and if so, at what enrollment level(s) do they occur?
- What arc the fixed and variable administrative costs at each site?
- What factors account for the differences in administrative costs across sites?
- How do administrative costs differ for the PPOs that do claims processing?
- How do administrative costs for the PPOs non-Medicare enrollment compare to the costs per member for the Medicare enrollment?
- To what extent are there joint costs, cost complementarities, and cross-subsidization between the administrative costs of the PPO's total business and the Medicare demonstration component?
- What types of Medicare program functions (claims processing, quality assessment, etc.) are most cost effective for the PPO to perform?
- What can we learn to help HCFA reline their requirements for a permanent program?

3. Data Sources and Requirements

To ensure data uniformity and reliability across the sites, it will be necessary for HCFA to define specific PPO reporting requiremenk prior to demonstration implementation. Additionally, specific rules for the measurement *of* administrative costs and enrollment should be developed These reporting requirements should address the following issues:

- Identification of the categories of costs that will be classified as administrative costs. For example, should marketing costs be included in administrative costs, or should marketing costs be considered separately?

- An allocation rule for marketing costs attributable to the demonstration, separately from those that arc more broadly generalizable to the PPO's total business.

- If an administrative expense item is used as an input to both the demonstration PPO and the non-demonstration PPO, consistent rules should be developed to designate how much of the cost can be attributed to the demonstration PPO and how much can be attriiuted to the non-demonstration PPO.

- A definition of "enrollment" for the PPOs. For BCBS/AZ individual enrollments arc straightforward For CAPP CARE (the nonenrollment model PPO) enrollment occurs whenever a beneficiary visits a PPO physician during the demonstration period. The number of "enrollees", then, should be highly correlated with the use of PPO providers. Two possible measures of enrollment for CAPP CARE and enrollees are:

    1. Total number of eligible beneficiaries in the service area multiplied by the proportion of total physician visits or revenues that are attributable to PPO physicians. (For example, if there are 100,000 eligible beneficiaries, and 35 percent of their total physician visits are to PPO physicians, there will be 35,000 "enrollees.")

    2. Number of eligible beneficiaries who either (a) only visit PPO providers, or (b) visit PPO providers a high percentage of the time (e.g., eligible beneficiaries who visit PPO providers at least 75 percent of the time).

- Criteria indicating the extent to which the PPOs will receive reimbursement from HCFA for the actual administrative costs incurred. For example, will the PPOs be fully reimbursed for all the administrative costs incurred, or will reimbursement be a function of the number of enrollees in the demonstration PPO?

There will be five major sources of data on administrative costs: reports of administrative costs incurred by HCFA, reports of administrative costs incurred by the carriers, periodic reports submitted by the PPOs to HCFA throughout the demonstration, data collected through PPO site visits, and information obtained through telephone interviews.

- HCFA's cost reports should include cost information on general administrative costs (e.g., the costs of interacting with the PPOs and the carriers) and marketing costs (e.g., the costs of demonstration announcements to beneficiaries). These costs will be estimated based upon HCFA staff estimates plus the actual costs of mailings and related expenses.

- The carriers' costs should include the costs of increased interaction with HCFA and increased time for claims processing attributable to the demonstration. These costs will be obtained by HCFA staff through review of HCFA contracts with carriers participating in the demonstration.

- The periodic reports submitted by the PPOs should contain the following information:

  - Total administrative costs for: (1) the demonstration PPO and (2) the total PPO.

  - Numbers of individual and group enrollees per month in the demonstration PPO, and number of enrollees in the total PPO.

  - PPO administrative costs attributable to each task (e.g., general administration, marketing, claims processing, utilization review, quality assurance, data processing, etc.), separately for the demonstration and for the PPO overall.

  - Administrative costs attributable to each input category (e.g., staff salaries, staff benefits, supplies, travel, equipment, rent, etc.), separately for the demonstration and for the PPO overall.

  - Demonstration fixed costs (costs that occur regardless of the number of enrollees, such as start-up costs) and variable costs (costs that are sensitive to the number of enrollees in the demonstration, such as utilization review and customer interaction).

  - Administrative costs per member per month incurred before and during the demonstration period for the PPO's non-demonstration enrollment.

  - Administrative charges that the PPOs apply to employers and insurers they serve, particularly if they serve any retiree groups.

-- Revenues received by the PPO (e.g., enrollment fees received from participating beneficiaries or administrative fees on each claim or visit received from participating physicians) that may offset administrative costs.

These data will be reported quarterly to HCFA by the demonstration PPOs, with a fiscal year end reconciliation.

During site visits and telephone interviews, more analytical information wili be obtained. Some of the issues to be discussed during these interviews include:

- Strategies for offsetting demonstration administrative costs.
- Determination of the types of Medicare program functions (e.g., claims processing, quality assurance) that are most appropriate and cost effective for the PPO to perform.
- Discussion of any administrative problems encountered, such as coordination problems with HCFA and the carriers.
- Determination of any economies in scale in administrative costs, and at what levels of enrollment these economics occur.
- Identification and quantification of any joint costs shared by the demonstration and non-demonstration PPOs.

4. **Methodology**

The administrative costs of the demonstration will be summarized in a series of descriptive tables. Table Shell VII.A.1 summarizes quarterly aggregate administrative costs and enrollment levels for each of the PPOs. Included in this table are revenues received by the PPO (e.g., enrollment fees from enrollees) that offset administrative costs. In Table Shells VII.A.2, VII.A.3, and VII.A.4, administrative costs are disaggregated by activity (Table Shell VII.A.2), input category (Table Shell VII.A.3), and fixed and variable components (Table Shell VII.A.4). In Table Shell VII.A.5, the analysis of marketing costs and enrollment levels is described. Fixed and variable quarterly marketing costs are reported, along with quarterly enrollment levels. Additionally, total average marketing costs per enrollee and average variable marketing costs per enrollee are reported, for the PPO's demonstration enrollment and non-demonstration enrollment.

TABLE SHELL VII.A.1

QUARTERLY ADMINISTRATIVE COSTS AND ENROLLMENT LEVELS
SITE NAME

Type of cost/Enrollment	Quarter #1	Quarter #2	• ••	Quarter #N
Administrative Costs				
Total Gross Administrative Costs				
Less Revenues Received to Offset Costs*				
Net Administrative Costs				
Enrollment				
Demonstration				
Total Number of Enrollees				
Number of Individual Enrollees				
Number of Group Enrollees				
Total Enrollment (Demonstration and Non-Demonstration)				
Average Administrative Cost per Enrollee				
-Demonstration				
-Non-Demonstration				

TABLE SHELL, VII.A.2

ADMINISTRATIVE COSTS BY ACTIVITY

	BCBS of Arizona			CAPP CARE			Family Health Plan
	1990	1991	Total	1990	1991	Total	1991 Total
General Administration							
-Demonstration							
--Total							
Enrollment Process							
-Demonstration							
--Total							
Utilization Review							
-Demonstration							
--Total							
Quality Assurance							
-Demonstration							
--Total							
Data Processing							
-Demonstration							
--Total							
Demonstration Reporting							
Claims Processing							
-Demonstration							
--Total							
Marketing							
-Demonstration							
Individual Enrollment							
Group Enrollment							
--Total							
Individual Enrollment							
Group Enrollment							
Other							
-Demonstration							
--Total							
Total							
-Demonstration							
-Total							

TABLE SHELL VII.A.3

ADMINISTRATIVE COSTS BY INPUT CATEGORY

	BCBS of Arizona			CAPP CARE			Family Health Plan
	1990	1991	Total	1990	1991	Total	1991 Total
Salaries							
--Demonstration							
-Total							
Benefits							
-Demonstration							
-Total							
Office supplies							
-Demonstration							
-Total							
Printing							
-Demonstration							
-Total							
Travel							
--Demonstration							
-Total							
Utilities							
-Demonstration							
-Total							
Equipment							
--Demonstration							
-Total							
Rent							
-Demonstration							
-Total							
Other							
-Demonstration							
-Total							
Total							
-Demonstration							
-Total							

TABLE SHELL VII.A.4

FIXED AND VARIABLE ADMINISTRATIVE COSTS FOR THE DEMONSTRATION

	BCBS of Arizona			CAPPCARE			Family Health Plan
	1990	1991	Total	1990	1991	Total	1991 Total
Fixed Costs							
Start-Up Costs							
Salaries and Benefits							
Supplies and Equipment							
Rent							
Data Processing							
Marketing							
-Individual Enrollment							
-Group Enrollment							
Other							
TOTAL FIXED COSTS							
Variable Costs							
Salaries and Benefits							
Supplies and Equipment							
Data Processing							
Marketing							
-Individual Enrollment							
-Group Enrollment							
Travel							
Other							
TOTAL VARIABLE COSTS							
TOTAL ADMINISTRATIVE COSTS							

TABLE SHELL VII.A.5

MARKETING COSTS AND ENROLLMENT LEVELS BY SITE

Marketing Costs/Enrollments	1990	1991	Two-Year Total
Marketing Costs			
Fixed			
-Demonstration			
-Non-Demonstration			
Variable			
-Demonstration			
-Non-Demonstration			
TOTAL			
-Demonstration			
-Non-Demonstration			
Enrollment Levels			
Individual			
-Demonstration			
-Non-Demonstration			
Group			
-Demonstration			
-Non-Demonstration			
TOTAL			
-Demonstration			
-Non-Demonstration			
Marketing Costs per Enrollee			
-Demonstration			
-Non-Demonstration			

Our approach to examining the administrative costs incurred by HCFA is summarized in Table Shell VII.A.6, and the approach to examining the administrative costs incurred by the carriers, and paid by HCFA, is summarized in Table Shell VII.A.7. Table Shell VII.A.8 depicts our approach to examining total administrative costs incurred under the demonstration.

The Fmal Report will also include one section summarizing the reporting requirements and rules established by HCFA for the collection and evaluation of administrative costs and another section summarizing the analysis based on the site visits and telephone interviews.

5. Discussion

The definition and measurement of administrative costs, and the collection of accurate and consistent data on these costs, is a complex and difficult task. We anticipate relying upon the Quarterly Report that HCFA will require PPOs to submit throughout the demonstration for data on PPO administrative costs. A draft of this Quarterly Report, outlining the data we hope to obtain for the evaluation, was included in the Status Report Plan submitted in February 1990.

The assessment of HCFA administrative costs for the demonstration, including carrier costs paid by HCFA, will require data to be collected from HCFA staff and carrier contracts by the HCFA Project Officer. Again, specification of these cost elements to be wllected is a complex measurement task We plan to discuss these issues with the HCFA Project Officer, in detail, over the next month, in order to finalize our approach to defining, measuring, and analyzing administrative costs associated with the demonstration for the Final Evaluation Design Report

B. STUDY OF MEDICARE PROGRAM COSTS

For the study of PPO impacts on Medicare program costs, we will build on the results of the use and cost analysis descrii above in Chapter V to estimate the total effect of the PPO intervention on costs to the Medicare program, both for each site and for all sites combined. The analysis will examine the net effect of the demonstration on Medicare program costs, taking into account changes

TABLE SHELL, VILA6

HCFA'S ADMINISTRATIVE COSTS

Cost Component	Pre-Demonstration	1990	1991
Administration/Interaction with PPOs and Carriers			
Marketing			
Other			
TOTAL			

TABLE **SHELL VII.A.7**

CARRIERS' ADMINISTRATIVE COSTS PAID BY HCFA

Cost Component	**Pre-Demonstration**	1990	1991
BCBS of Arizona			
Interaction with HCFA			
Claims Processing			
Other			
TOTAL			
Carrier for CAPP **CARE:** Occidental			
Interaction with HCFA			
Claims Processing			
Other			
TOTAL			
Carrier for Family Health Plan:			
Interaction with HCFA			
Claims Processing			
Other			
TOTAL			

TABLE SHELL VII.A.8

TOTAL DEMONSTRATION ADMINISTRATIVE COSTS

costs	1990	1991	Two-Year Total	Average Per Member Per Month
PPOs				
BCBS of Arizona				
CAPP CARE				
Family Health Plan				
TOTAL PPO				
HCFA				
Carriers				
Total Demonstration Administrative Costs				

in both reimbursements and administrative costs. In the discussion that follows, we first discuss the research issues that will be addressed in this analysis and then discuss our analytic approach. We conclude by discussing the schedule for the analysis and presenting table shells.

1. Research Issues

To evaluate the total effect of the PPO demonstration on costs to the Medicare program, we must take into account the effects of the demonstration on reimbursements as well as on administrative costs. The effects of the demonstration on Part A and Part B reimbursements in each site will be estimated as part of the use and cost analysis described above in Chapter V. In the sites containing enrollment model PPOs, the use and cost analysis will estimate the direct eff" of the PPO on reimbursements for enrollees. In the site containing the non-enrollment model PPO, the analysis will yield an estimate of the overall effect of the demonstration on reimbursements in the demonstration site. These results from the use and cost analysis will be combined with data on administrative costs under the demonstration to investigate the total effects of the demonstration on Medicare program costs.

To assess the total effect of the PPO demonstration on Medicare program costs, we will address the following questions:

- What is the total effect of the demonstration on costs to the **Medicare** program across all sites?
- To what extent does the net effect of the demonstration on Medicare program costs vary across sites?
- To what extent do increased administrative costs under the demonstration of&et any reductions in Medicare reimbursements?
- If there are differences across sites in the effectiveness of the demonstration in reducing Medicare program costs, is this due primarily to differences in average administrative costs or to differences in impacts on reimbursements?

2. Analytic Approach

To illustrate the approach that will be used to estimate the total effects of the demonstration on Medicare program costs, we consider a given site containing an enrollment model PPO. Let P_E and P_N represent the total population of PPO enrollees and nonenrollees, respectively, in the site. In addition, let R_E and R_N represent the estimated impact of the PPO on reimbursements per beneficiary for enrollees and nonenrollees, respectively, in that site. Thus, R_E is an estimate of the difference between the actual reimbursement per enrollee that is observed under the demonstration and the reimbursement per enrollee that would have been observed in the absence of the demonstration, and R_N is defined analogously for nonenrollees. These impact estimates will be obtained in the use and cost analysis using the analytic methods described above in Chapter V. The impact estimates reflect the total change in Medicare reimbursement under the demonstration due to changes in service utilization and to changes in deductible and coinsurance requirements.

The impact estimates computed on a per beneficiary basis will be used to estimate the total impact of the PPO intervention on Medicare reimbursements as follows:

$$R = R_E * P_E + R_N * P_N$$

Thus, the total impact of the PPO intervention on Medicare reimbursements in a given site (R) is the sum of the total impact on the enrollee population in that site plus the total impact on the nonenrollee population. This approach will be used to estimate total PPO impacts for each site and for all sites combined. The analysis will be conducted separately for Part A and Part B reimbursements as well as for total reimbursements, to identify the source of any cost savings.

The analysis described above will yield estimates of the impact of the PPO intervention on Medicare reimbursements. However, to assess the total impact of the intervention on costs to the Medicare program, it will be necessary to consider administrative costs as well. Let A_0 be the total administrative cost that the Medicare program would have incurred for all PPO enrollees in a given

site in the absence of the demonstration. This administrative cost represents claims processing costs for carriers and intermediaries. Let A_1 be the administrative cost actually incurred by the Medicare program for the PPO enrollees under the demonstration, which includes: (1) payments to the PPO to cover the fixed and marginal costs of administering the program, and (2) payments to carriers and intermediaries to cover claims processing expenses. Thus, the total effect of the PPO demonstration on the Medicare program's administrative costs in a given site is given by $A_1 - A_0$. This approach will be used to assess the effect of the demonstration on administrative costs for each site and for al! sites combined

The overall impact of the PPO intervention on Medicare program costs will be computed by summing the estimated impacts on total reimbursements and on total administrative costs. A measure of the overall impact of the PPO intervention will be estimated for each demonstration site as well as for all sites combined. The results will be presented as illustrated in Table Shell VILB.l. By comparing cost impacts across sites, we can determine whether PPOs with particular design features appear to be more successful at containing costs than others. We can also determine the extent to which any reduction in reimbursements in each site is offset by higher administrative costs. These results will be useful to HCFA in projecting the total cost implications of a full scale PPO implementation.

C. ANALYSIS OF PROVIDER PARTICIPATION

The operational feasibility of the voluntary enrollment Medicare PPO concept, and its effectiveness as a means of controlling total Medicare program costs through reductions in inappropriate and unnecessary use of health services, requires that beneficiaries find the program attractive enough to participate and that physicians and other providers are willing to contract with PPOs to serve Medicare beneficiaries. In the analysis of provider participation, we will explore the patterns of provider participation observed in the demonstration PPOs with the objective of identifying factors that may enwurage or hinder participation. In addition, we will attempt to

TABLE VILB.l

EFFECTS OF THE PPO DEMONSTRATION ON MEDICARE PROGRAM COSTS

	BCBS/AZ	CAPP CARE	Family Health Plan
Effect on Reimbursements			
Total			
Part A			
Part B			
Effect on Administrative costs			
Net Effect on Medicare Program Costs			

structure our examination to permit the results to be generalized to the potential for provider participation in a national, voluntary enrollment Medicare PPO program.

1. Analysis of Provider Participation in the Demonstration PPOs

The participating PPOs in the Medicare PPO demonstration are existing PPOs in the non-Medicare, private sector market. Physicians currently under contract with the existing PPOs will be given the option to participate in the Medicare demonstration program, and it is anticipated that the provider network for the Medicare beneficiaries under the demonstration will be similar to the group of physicians available to the PPOs' non-demonstration enrollment. This approach to the demonstration was selected by HCFA in order to avoid the possibility that a specially selected group of physicians for the demonstration would be, or be perceived as, of lower quality on measures of credentials and hospital affiliation than physicians generally available to Medicare beneficiaries in the local market area. However, despite this structure, there remain several questions and potential concerns about the provider network that will be available to Medicare beneficiaries through the PPO demonstration, including:

1. Is there selection, based on characteristics of physicians and training, among physicians who choose to join or not join the PPOs, overall?

2 Is there selection, based on characteristics of physicians and training, among physicians in the PPO's network who choose to participate in the Medicare demonstration network?

3. Over the demonstration period, is there significant turnover in the Medicare physician network and, if so, are the characteristics and training of physicians who withdraw from participation different from those of physicians who continue to serve Medicare beneficiaries under the demonstration?

External validity is the degree to which the results obtained from an individual study are applicable to the larger population of interest In this component of the evaluation, we are interested in identifying the differences, if any, between the providers who participate in this demonstration and those that provide services to private sector PPO members and to the Medicare population, generally.

Understanding these differences will facilitate generalization of the demonstration findings to a national program and may be useful in developing guidelines for recruitment and monitoring of provider participation in PPOs that serve the Medicare program

Conceptual framework and research questions. There has been limited research conducted on the characteristics of physicians who contract with HMOs, although much of this previous research examines physicians in traditional group and staff model HMOs prior to the extensive contracting of HMOs with fee-for-service practice physicians that has become the norm in the past decade. The relevant HMO physician studies for providing insights into the characteristics of physicians that contract with PPOs would be those that examine physicians who contract with traditional IPA model HMOs receiving fee-for-service based payments. However, we were not able to identify any studies of the characteristics of physicians that contract with PPOs. Since most PPOs require that physicians accept a discount on charges or offer a predetermined fee schedule, it may be of some value to examine results of studies of physicians who have agreed to accept assignment on Medicare claims, or who are Participating Physicians in the Medicare program Analyses of assignment of Medicare claims indicate that physicians are more likely to accept assignment and to become PAR physicians if they have a high proportion of Medicare patients, if their patients have lower incomes, if the proportion of Medicare patients in the area is high, and if the market area in which they practice is highly competitive (including substantial HMO presence). Mitchell et al. (1988) found that financial considerations were among the most important factors in the decision to accept assignment, including the differential between the Medicare allowed charge and the physician's regular charge for the procedure and the likelihood of the entire charge being uncollectible from the patient and becoming a "bad debt."[1]

[1]See Mitchell, Janet B., et al., "To Sign or Not to Sign: Physicians Participation in Medicare, 1984," *HCFA Review*, Volume 10, No. 1, Fall 1988.

The characteristics of PPO physicians compared to all area physicians also may be influenced by the selection criteria imposed by the PPOs in recruiting a provider network Langwell, Carlton, and Swearingen (1989) report that the majority of the 116 PPOs that applied to participate in the Medicare PPO demonstration indicate that their recruitment process and selection criteria included: (1) review of credentials, including years of experience; (2) review of previous practice and utilization patterns: (3) review of prior disciplinary action; and (4) review of malpractice history. General requirements included license to practice, hospital privileges at a member hospital, geographic accessibility to PPO members, and willingness to adhere to the PPO's utilization review processes.[2] Thus, we would expect to observe that physicians selected by PPOs for their network will differ from other physicians in their local market area in the following ways:

1. More experienced
2. More likely to be board certified or board eligible
3. Less likely to have been disciplined by the local medical society or state licensure authorities
4. Less likely to have been involved in malpractice litigation
5. More likely to practice medicine in a cost efficient way

Similarly, physicians who are dropped from the PPO network after some period of participation may be different from remaining PPO physicians along some of these dimensions, especially in their practice patterns and the costs of care associated with these patterns.

If PPO physicians' decisions to participate in the PPO's Medicare demonstration program are similar to their decisions to participate in the Medicare program, then we would expect to observe that physicians participating in the Medicare demonstration network would differ from PPO physician network physicians with respect to:

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[2]See Langwell, Kathryn, et al., "Industry Profile: An In-Depth Look at the Medicare PPO Applicants," Mathematica Policy Research Monograph, 1989.

- The proportion of the physician's practice accounted for by Medicare beneficiaries
- The relatively low average income level of Medicare beneficiaries seen by the physician
- The age and/or longevity of the Medicare-participating physician (the physician is young and/or newly established in an area where competition for patients is strong and average patient volume per physician is declining)

Given this limited evidence on provider participation in Medicare and alternative health care programs, we have chosen not to specify hypotheses for investigation in this component of the evaluation, but instead to address a number of research questions, including:

- What are the characteristics of PPO physicians who participate in the demonstration?
- How do the demonstration physicians differ from other physicians who treat Medicare patients in the fee-for-service sector?
- How do the demonstration physicians differ from other PPO network physicians?
- Are there differences in the characteristics of demonstration physicians by PPO demonstration site? Can these differences be related to geographic variation in characteristics of physicians and markets or to variations in PPO policies and procedures?
- Are there differences in the factors that influence the decisions of PPO network physicians about the demonstration by demonstration site? Can these differences be related to geographic differences in the physician market or to variations in PPO policies and procedures?

Methodology and data We will conduct three related analyses in our evaluation of physician participation in this demonstration:

1. A comparison of the characteristics of physicians who participate in the PPO network with those of all physicians in the market area
2. A comparison of the characteristics of PPO network physicians who choose to participate in the demonstration with those of PPO network physicians who do not participate
3. An analysis of the factors that PPO physicians report influenced their decisions to participate in the demonstration or not and of their perceptions

of the advantages and disadvantages of their participation in the demonstration

We will use a variety of data sources for our analyses of physician participation in PPOs and, among network physicians, in the demonstration. We will use Area Resource File (ARF) data on characteristics of all physicians located in the same counties as the PPO demonstrations. The ARF file, available by county, will provide data on the demographic characteristics of physicians (age, sex, race), training and specialty, and teaching affiliations. We will obtain comparable information from the PPOs on the characteristics of all their network physicians and on the characteristics of those physicians that choose to participate in the demonstration.

The ARF also will provide information on the characteristics of counties in which the PPO demonstrations are operating, including population characteristics (population over 65, income, proportion of population under poverty level), health care resources (number of physicians per 100,000 population and number of hospital beds per 100,000 population), health care utilization (hospital days per thousand for Medicare and the total population, number of surgical procedures, etc.), health status of the population (infant mortality rates, overall mortality rates, incidence of selected diseases), and health care costs (Medicare expenditures, prevailing charges).

The characteristics of each of the PPOs, including physician recruitment and retention policies, payment policies, and utilization review, will be obtained from PPO administrative personnel and written documents (e.g, UR Procedure Manual) as part of the process analysis.

Analysis plan. Because physicians who participate in the demonstration are required to accept assignment on all claims incurred by PPO enrollees and because there may be administrative implications of the demonstration, it is anticipated that some PPO network physicians will choose not to participate in the Medicare PPO demonstration, We will examine the characteristics of area physicians, the characteristics of all PPO physicians, and the characteristics of PPO Medicare demonstration network physicians to identify any significant differences (Table Shell VII.C.1).

TABLE SHELL VII.C.1

COMPARISON OF AREA, PPO NETWORK, AND MEDICARE NETWORK PHYSICIANS, 1991

	BCBS/AZ			CAPP CARE			ALLPPOS		
	PPO Area	PPO Network	Medicare Network	PPO Area	PPO Network	Medicare Network	PPO Area	PPO Network	Medicare Network
Number of Physicians									
Specialty									
family practice or general practice									
internist									
OB/gyn									
cardiologist									
general surgery									
dermatologist									
etc.									
Ratio of primary care to specialty physicians									
With teaching affiliation (%)									
Board certified eligible (%)									

Characteristics of interest for this comparison, using data from the demonstration PPOs, include specialist/primary care ratio, type of specialist, and teaching affiliation. Of special interest will be the extent to which there are differences in the rate at which network physicians participate in the demonstration among the PPOs, and whether those differences can be explained in terms of differences in the characteristics of all network physicians across PPOs, in the competitiveness of the health care markets, in the PPO's fee schedule and the Medicare allowed charges for selected procedures, and other factors.

VIII. ORGANIZATION AND SCHEDULE FOR THE EVALUATION

A. PROJECT STAFFING

Our proposed staffing for the evaluation in indicated in Figure VIII.1. Harold Beebout, Director of Research and a Senior Vice President of Mathematica Policy Research, will replace Kathryn Langwell as Task Leader for the evaluation. Dr. Beebout has nearly two decades of experience in designing and conducting policy research for numerous government agencies, including the Department of Health and Human Services. The commitment of Dr. Beebout to this rob will provide the corporate attention to the successful allocation of resources and oversight of technical quality necessary to ensure that the evaluation produces the comprehensive results required by HCFA.

Lyle Nelson, a Senior Economist at MPR who conducted the analysis of the impact of the Medicare Competition Demonstrations on use and costs of services provided to Medicare beneficiaries, will continue to serve as Co-Principal Investigator with responsibility for the design and implementation of the quantitative components of the evaluation.

Merrile Sing, an economist at MPR will work closely with Dr. Nelson and Dr. Beebout on the design and conduct of the analyses of biased selection, use and costs impacts, and administrative costs of the demonstration. Dr. Sing will also serve as Deputy Task Leader for the evaluation.

These individuals will be assisted by Elizabeth Quinn who will participate in the site visits and preparation of the Status Reports for the demonstration. In addition, Julie Sykes will work with Rob Olsen in the design and implementation of the evaluation data base, and Rhoda Cohen and Rita Stapulonis will direct the structured discussions with beneficiaries.

B. PROJECT SCHEDULE

There are two principal reasons for the changes in the project schedule that are shown in Figure VIII.2. First, at the time that the RFP was issued, all the demonstration PPOs were expected to be

FIGURE VIII.1

PROJECT ORGANIZATION CHART

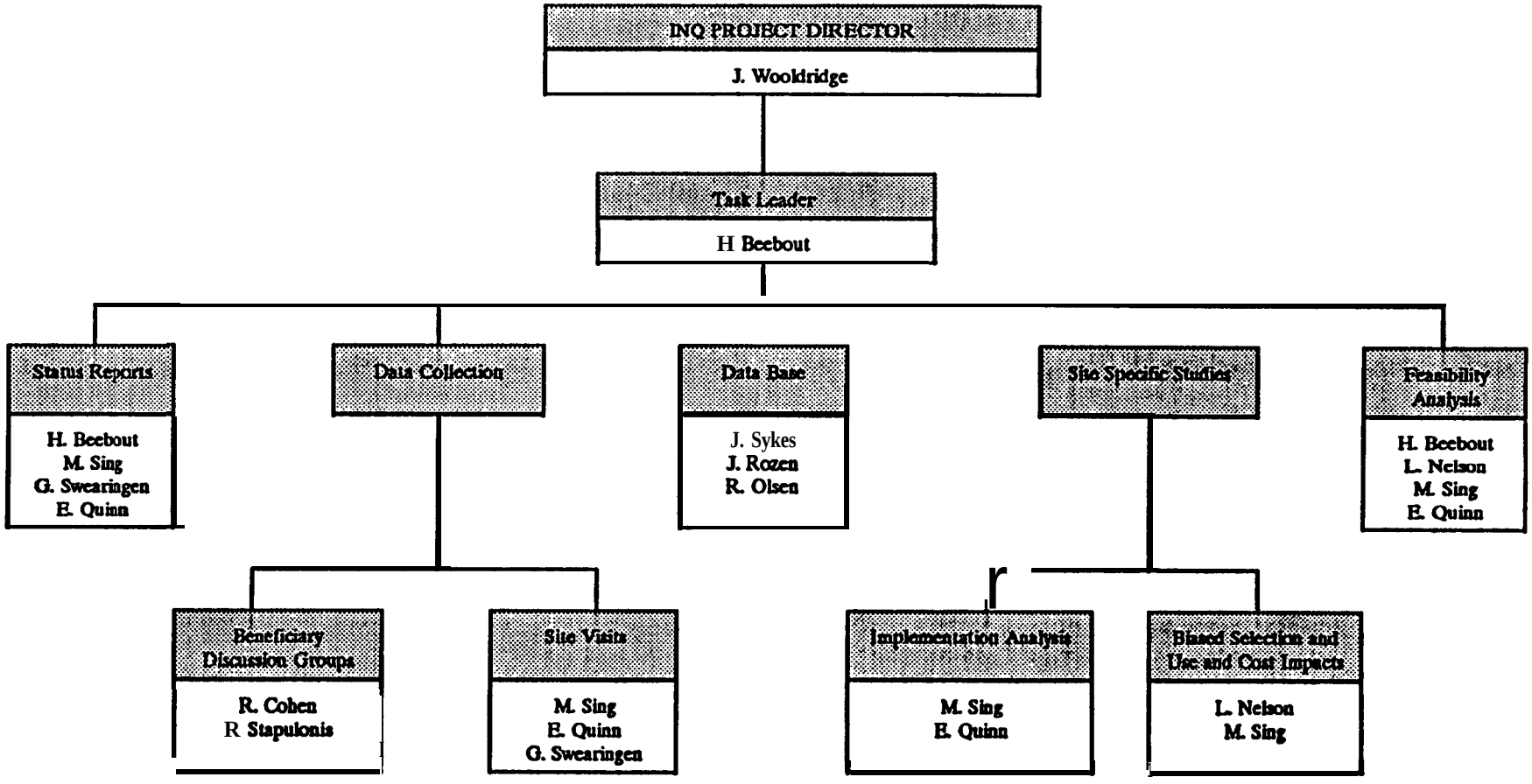
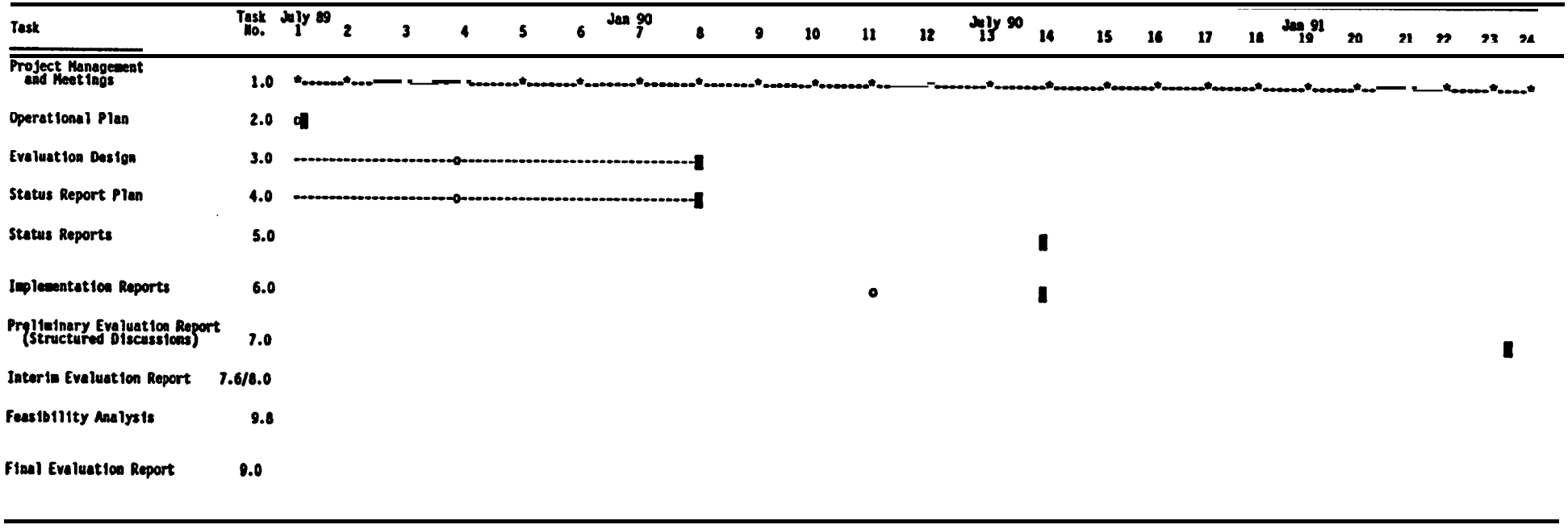


FIGURE VIII.2

PROJECT SCHEDULE, BY TASK (FIRST 24 MONTHS)



Legend: ▒ = Meetings with Project Officer

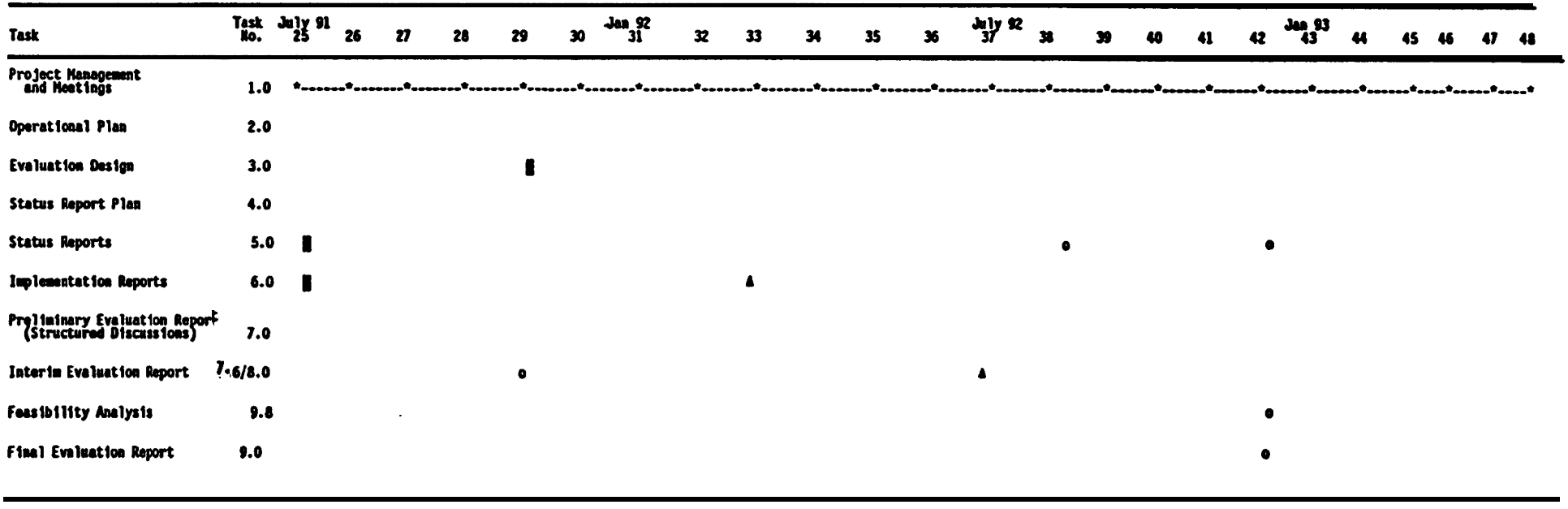
▓ = Deliverable Delivered

▲ = Revised Deliverable Due Date

o = Original Deliverable Due Date

* = Monthly Progress Reports

FIGURE VIII.2 (continued)



Legend: ▒ = Meetings with Project Officer
▒ = Deliverable Delivered
▲ = Revised Deliverable Due Date
o = Original Deliverable Due Date
* = Monthly Progress Reports

FIGURE VIII.2 (continued)

Task	Task No.	July 93 49	50	51	52	53	Dec 93 54
Project Management and Meetings	1.0	•	- •	-*-------*-------*-------*			
Operational Plan	2.0						
Evaluation Design	3.0						
status Report Plan	4.0						
Status Reports	5.0						
Implementation Reports	6.0						
Preliminary Evoluotlon Report (Structured Discussions)	1.0						
Interim Evaluation Report	7.6/8.0						
Foovlbllity Analysis	9.1			▲			
Final Evaluation Report	9.0		▲				

Legend: ▒ = Meetings with Project Officer
▐ = Deliverable Delivered
▲ = Revised Deliverable Due Date
o = Original Deliverable Due Date
* = Monthly Progress Reports

LIST OF DELIVERABLES AND KEY EVENTS

1.	Summary of Initial Meeting	July 24, 1989
2.	Operational Plan for the Evaluation	July 31, 1989
3.	Draft Evaluation Design	October 27, 1989
4.	Final Evaluation Design	February 14, 1990
4.a.	Revised Evaluation Design	November 1991
5.	Draft Status Report Plan	October 27, 1989
6.	Final Status Report Plan	February 14, 1990
7.	Status Reports	May 1990-Dec. 1992
7.a.	First Status Report	
	– Site Visit	May - July 1990
	– Status Report (Part 1)	August 1990
	– Status Report (Part 2)	July 1991
7.b.	Second Status Report	
	– Site Visit	May 1991
	– Status Report	July 1991
7.c.	Third Status Report	
	– Site Visit	June 1992
	– Status Report	August 1992
7.d.	Fourth Status Report	
	– Telephone Interviews	November 1992
	– Status Report	December 1992
8.	Draft Implementation Report	
8.a.	– Implementation Report (Part I), Covering BCBS/AZ	August 1990

8.b.	– Implementation Report (Part II), Covering CAPP CARE, CareMark, HealthLink, and Family Health Plan	July 1991
9.	Final Implementation Report, Covering all PPOs	
9.a.	– Draft	January 1992
9.b.	– Final	March 1992
10.	Conduct Beneficiary Discussion Groups	March - April, 1991
11.	Draft Interim Evaluation Report	May 1992
12.	Final Interim Evaluation Report	July 1992
13.	Outline of Feasibility Analysis Report	March 1993
14.	Draft Report on Feasibility Analysis	June 1993
15.	Final Report on Feasibility Analysis	September 1993
16.	Draft Evaluation Report	June 1993
7.	Final Evaluation Report	August 1993

operational by October 1989. However, the demonstration start dates did not occur until 1990 for any of the PPOs and the start-up dates were different for each PPO. Our schedule in Table VIII.2 is based on the following demonstration start-up dates:

- Blue Cross and Blue Shield of Arizona: January 1990
- CAPPCARE: April1990
- Family Health Plan: January 1992 (expected)
- CareMark and HealthLink will not become operational

The implications of these changes include:

- The Status Reports on the demonstration will focus on different stages of the PPOs' experiences, throughout the evaluation.
- The implementation analysis was conducted in two stages -- the BCBS/AZ implementation experience was analyzed in a draft report submitted in April 1990. The CAPP CARE, Family Health Plan, HealthLink and CareMark implementation experience was analyzed in a draft report submitted in August 1990. A final implementation analysis report will be prepared to update the information from the two reports. This final report will be submitted in draft form in January 1992 and finalized in March 1992
- The Preliminary Evaluation Report has been replaced by two reports: The Preliminary Report on Beneficiary Choice and the Interim Report on Beneficiary Choice, Biased Selection, and Use and Cost of Services. The Preliminary Report on Beneficiary Choice was based on an analysis of beneficiary choice for BCBS/AZ and CAPP CARE from structured discussion groups and was submitted in draft form in June 1991. The Interim Report will be based on analysis of claims data for BCBS/AZ and CAPP CARE and will be submitted in draft form in May 1992

Second, the project schedule has changed because of delays and problems with the Part B claims data from the carrier for CAPP CARE We did not receive claims data from the carrier until October 31, 1991 because the carrier took longer than anticipated to produce the data, and the data were sent to us by Third Class mail. Upon recent review of the data, we have learned that a key variable (the rendering physician variable) is missing from the data Without the rendering physician variable we will be unable to uniquely identify physicians who belong to group practices.

Due to the holidays and the need to request the rendering physician variable, we anticipate that we will receive complete, raw Part B claims data by early January. We estimate four weeks to edit the data, eight weeks to create the analysis files (identify all claims for services provided by demonstration physicians, create beneficiary-level and physician-level files, and define treatment and comparison groups), two weeks to conduct the tabular and regression analysis, and three to four weeks to write, review and produce the report.

Thus, the earliest date (assuming no other problems with the data) for the draft of the Interim Report on Beneficiary Choice, Biased Selection and Use and Cost of Services for CAPP CARE is May 1992

The Interim Report on Beneficiary Choice, Biased Selection, and Use and Cost of Services for BCBS/AZ will be submitted in summer 1992 if we receive 1990 Part B claims data for Arizona during the winter of 1991-1992 We will receive the 1990 Part B claims data for Arizona from Health Economics Research, Inc. (HER). When we last discussed the 1990 Arizona data with HER, HER was unable to estimate when the 1990 Arizona claims data would be ready.

APPENDIX A:

ANALYSIS PLAN FOR FAMILY HEALTH PLAN

In this appendix we present an analysis plan and schedule for an evaluation of the Famiiy Health Plan demonstration PPO, which is scheduled to begin on January 1, 1992. Our proposed evaluation design is similar to the design for the evaluation of Senior Preferred (Blue Cross and Blue Shield of Arizona) with the following major revision:

- There will be a one day sample intake period for Family Health Plan (January 1, 1992) and a one year follow-up period (January 1, 1992 through December 31, 1992).

'Ibis appendix is organized in four sections. We begin with a description of Famiiy Health Plan, then discuss the sample and data, describe the analysis plan, and conclude with a schedule.

1. Description of Family Health Plan

Family Health Plan will be an employer insurance plan PPO (a group enrollment model PPO) in the Minneapolis-St. Paul metropolitan area. It is scheduled to begin operations on January 1, 1992 with 1,150 enrollees. Family Health Plan plans to market to employer groups; there are no plans to enroll individuals. To date, two employers have signed up: Northwest Air and Medigasco.

Enrollees in Family Health Plan will be required to have many services in and out of the provider network pre-certified.

Each employer is offering its own benefit plan. The plan for Northwest Air retirees will cover ail billed charges (including balance bill amounts) if the service is pre-certified and a network provider is used. Enrollees will not have to file claims for services from network providers.

The proposed Medigasco plan has a $300 deductible for Part A and Part B services in and out of the network After the deductible has been reached, the plan will pay 80 percent of the coinsurance for Part B services received from network providers, up to a $1,500 out-of-pocket limit. For Part B services received outside of the network, the plan will pay 60 percent of the coinsurance, up to a $3,000 out-of-pocket limit.

2. Samples and Data Sources

A comparison group methodology will be used to compare enrollees in Family Health Plan to a sample of nonenrollees in the Family Health Plan service area These beneficiaries will be compared during a baseline period prior to the demonstration start date, and during a follow-up period beginning at the end of the sample intake period.

a. The Beneficiary Samples and Analytic Time Periods

The enrollee group will include all beneficiaries who have enrolled in Family Health Plan during a specific sample intake period. These enrollees will be compared to an equal number of nonenrollees in the Minneapolis-St. Paul metropolitan area randomly drawn from the Health Insurance Skeleton Eligibility Write-Off (HISKEW) file at the end of the intake period. Data for these beneficiaries will be collected for a baseline period prior to their enrollment in Family Health Plan, and during a follow-up period that begins at the end of the intake Period.

The intake period will begin on January 1, 1992 (when the demonstration is scheduled to begin): If we use a long intake period (e,g., an intake period that ends one year later), then the sample size is likely to be larger. With a longer intake period there is more time for Family Health Plan to sign up more group enrollees, but a long intake period will delay our evaluation of the PPO and may not increase the sample size by very much If we use a short intake period (e.g., one day), the sample will only include the beneficiaries enrolled on the demonstration start date, but our evaluation can be conducted much sooner.

Prior reimbursements of the treatment and comparison groups will be compared during a two year baseline period prior to the demonstration start date. A two year baseline period will enable us to examine both the level and trend in service use and cost for sample members for the analysis of biased selection. To ensure that claims data for the baseline period are available for the entire sample, the sample will be restricted to (1) beneficiaries who were at least 65 years of age at the start of the baseline period and (2) beneficiaries who have not been enrolled in a Medicare HMO.

The baseline period will be the two calendar year period prior to the demonstration (calendar years 1990 and 1991). Reimbursement data for the baseline period will be from the Medicare Automated Data Retrieval System (MADRS) file. The MADRS file contains claims level Part A data and annual summary level Part B data.

Comparisons of the use and cost of services for the treatment and comparison groups during a follow-up period (using statistical methods to control for biased selection) will he used to assess the effect of the PPO. With a short follow-up period (e.g., six months) many enrollees will have little or no experience with the PPO (many of the enrollees may not even visit a physician during that time period), and it would be difficult to assess the effect of the PPO. With a long follow-up period (e.g., two years), we will be able to assess the effect of the PPO over longer period of time, but the analysis could not be completed before the end of the contract period (December 1993). Thus, we recommend a follow-up period of one year. A one year follow-up period will allow the enrollees and demonstration physicians sufficient time to respond to the demonstration, and it will not unduly delay a report of the evaluation results.

b. Data Sources

To draw the beneficiary sample and conduct the analyses we will use the following major data sources:

- The Health Insurance Skeleton Eligibility Write-Off (HISKEW) file will be used to draw the nonenrollee sample and it will be the source of demographic data for the enrollee and nonenrollee samples.
- Enrollment data provided by Family Health Plan will be used to identify the individuals enrolled in Family Health Plan.
- The Medicare Automated Data Retrieval System (MADRS) file will be the source of reimbursement data during the baseline period (calendar years 1990 and 1991).
- The Common Working File will be the source of claims level Parts A and B data for 1991 and 1992. These claims level data will be used to construct variables measuring the use of specific Part B procedures one year prior to the demonstration start date and during the follow-up period.

Additionally, Family Health Plan staff will be interviewed on the telephone and during site visits to learn what aspects of the PPO demonstration make it attractive to Family Health Plan (e.g., greater market penetration). Additional data, such as administrative cost data, may also be obtained during site visits.

3. The Analysis Plan

The analysis of Family Health Plan will include analyses of beneficiary choice, biased selection, and the use and cost of services. A comparison group methodology will be used to compare enrollees in Family Health Plan (the treatment group) to a group of nonenrollees in the Family Health Plan service area who arc as similar as possible to Family Health Plan enrollees except that they have not enrolled in the PPO.

a. Analysis of Beneficiary Choice and Biased Selection

Family Health Plan will be a group enrollment model PPO. The decision to enroll in FHP will be made by employers on behalf of their retirees. FHP does not plan to market to individual beneficiaries, so individual beneficiaries in the FHP service area will not make an enrollment decision. Consquently, the analysis of beneficiary choice for FHP will focus on beneficiary choice of demonstration PPO physicians and non-demonstration physicians after the beneficiaries are enrolled in the PPO.

The analysis of beneficiary choice and biased selection for Family Health Plan from an analysis of claims data will address the following research questions:

- What portion of enrollees use Family Health Plan demonstration providers and does this change during the course of the demonstration?
- Are Family Health Plan demonstration providers used for certain types of services and non-demonstration providers for others?
- Do enrollees who use Family Health Plan demonstration providers tend to use these providers exclusively?

- How do Family Health Plan enrollees differ from nonenrollees with respect to demographic characteristics and prior use and cost of Medicare services?

In addition to the above questions addressed through statistical analysis of individual-level data, we will also address a number of questions regarding enrollment and provider choice using data obtained from a set of structured discussions with PPO enrollees. These discussions will be held separately with enrollees in the Northwest Air plan (one group) and enrollees in the Medigasco plan (one group), and the following issues will he addressed:

- How well do the enrollees understand the PPO benefits and the incentives to use PPO rather than non-PPO providers?
- How do enrollees decide whether to use a PPO or non-PPO provider? How important are the incentives offered by the PPO?

We will describe and compare the demographic characteristics and prior use of enrollees with those of an equal-sized random sample of nonenrollees in the service area to assess the comparability of the two groups for the use and cost analysis. The choice to use PPO or non-PPO providers once enrolled will be analyzed by examining claims for Family Health Plan enrollees during the follow-up period to determine the percent of claims and reimbursements that are for services rendered by PPO and non-PPO providers and to determine whether there are any particular types of services or physician specialties for which these enrollees are likely to go outside of the PPO network. We will also compare the characteristics and prior use of enrollees who stay in the network for all (or most) of their care with those of enrollees who go outside the network for their care.

b. Analysis of Use and Cost of Services

The analysis of the use and cost of services will address the following research questions:

- What is the impact of the PPO on enrollees' total, Part A, and Part B reimbursements? What is the impact on hospital admission rate and the total days of inpatient care?

- What is the impact of the PPO on enrollees' use of specific diagnostic and therapeutic Part B procedures?
- Does the PPO appear to be shifting care from an inpatient to an outpatient setting or substituting low cost procedures for high cost procedures?

The use and cost analysis will include both a beneficiary-based analysis and a physician-based analysis. For the beneficiary-based use and cost analysis we will estimate impacts on service use and cost using regression models in which measures of prior use and cost of services (during a two year baseline period) are included to control for biased selection. Measures of service use and cost include average Medicare reimbursement during the demonstration (Part A, Part B, and total), number of hospital admissions, number of hospital days, and whether or not the beneficiary was hospitalized during the demonstration. To determine the sources of reductions in total Part B costs, wewillalsoexamin e specific Part B procedures. The procedures we will examine include procedures which account for a significant portion of the growth in Part B costs, expensive procedures for which less expensive substitutes are available, and procedures that have large or moderate variation in rates of use across sites.[1]

For the physician-based analysis we will compare the practice patterns of demonstration PPO physicians to nondemonstration physicians practicing in the Family Health Plan service area. If we are able to uniquely identify physicians during (at least) a one year baseline period prior to the demonstration and during the followup period, we will conduct simple comparisons between demonstration and non-demonstration physicians. By physician specialty, we will present the number of specific procedures performed per beneficiary treated (or per encounter) one year prior to the demonstration start date and during the first year of the demonstration. This comparison will indicate the extent that demonstration physicians practiced a more cost effective style of medicine prior to the

'See Mitchell, J.B., Wedig, and Cromwell, "The Medicare Physician Fee Freeze: What Really Happened?", *Health Affairs,* Volume 8, No. 1, Spring 1989 and Chassin et al., "Variations in the Use of Medical and Surgical Services by the Medicare Population," *The* New *England Journal of Medicine,* Volume 314, No. 5., January 30, 1986.

demonstration, and whether they changed their behavior relative to the non-demonstration physicians during the first year of the demonstration.

4. schedule

The following schedule assumes a one day intake period (January 1, 1992) and one year follow-up period (January 1, 1992 through December 31, 1992):

Date	Activity
January 1992	Request a list of enrollees from Family Health Plan
February 1992	Request HISKEW data for the five county service area of Family Health Plan
March 1992	Match enrollee identification numbers used by Family Health Plan to health insurance claims (HIC) numbers in the HISKEW file.
June 1992	Request MADRS data by HIC number for enrollee and nonenrollee sample members for baseline period (January 1990 through December 1991).
March 1993	Request data from the common working file by HIC number from January 1991 to end of followup period
April - June 1993	Construct analysis files, conduct the analysis, and write the report
June 1993	Draft Report on Beneficiary Choice, Biased Selection, and Use and Cost of Services for the Family Health Plan Demonstration